Nov. 7, 1939. C. R. MABON 2,179,156

TYPEWRITING MACHINE

Filed Sept. 25, 1936 3 Sheets-Sheet 1

Fig. 1.

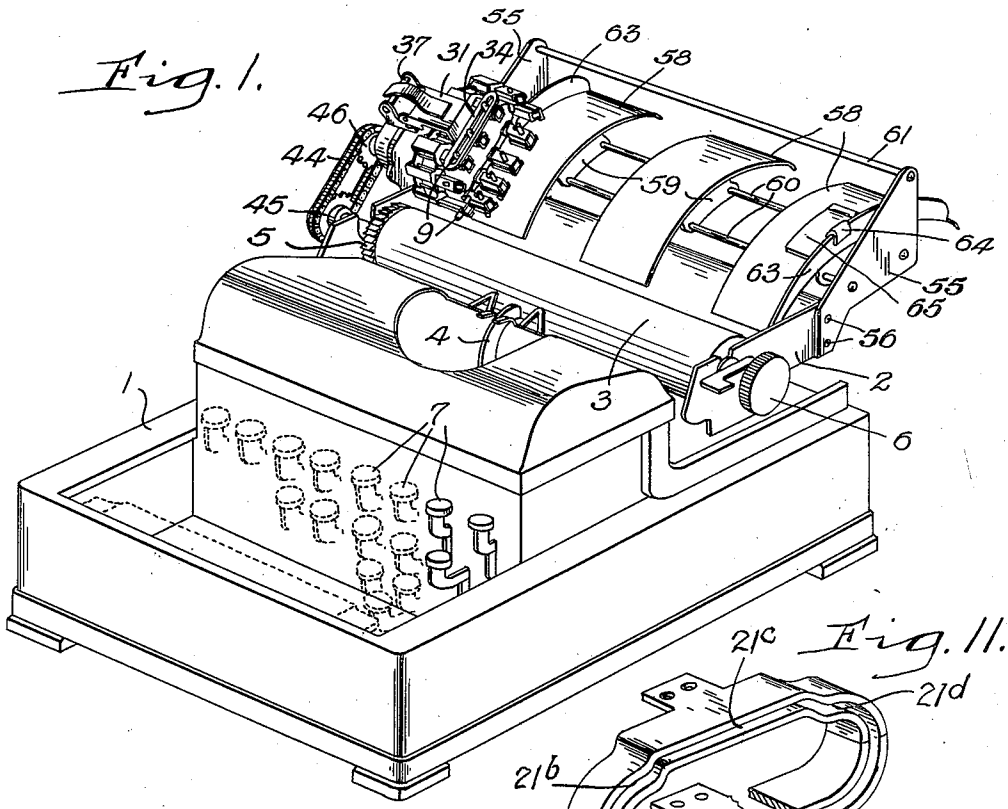


Fig. 11.

Fig. 8.

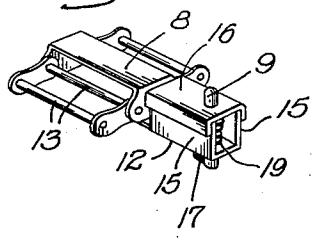


Fig. 10.

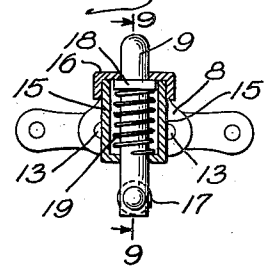
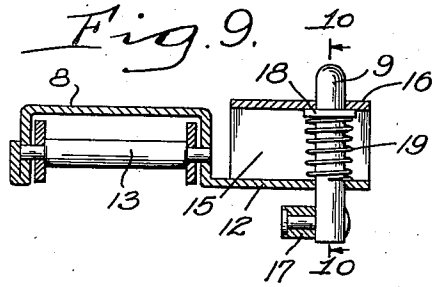


Fig. 9.



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Nov. 7, 1939. C. R. MABON 2,179,156

TYPEWRITING MACHINE

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Fig. 2.

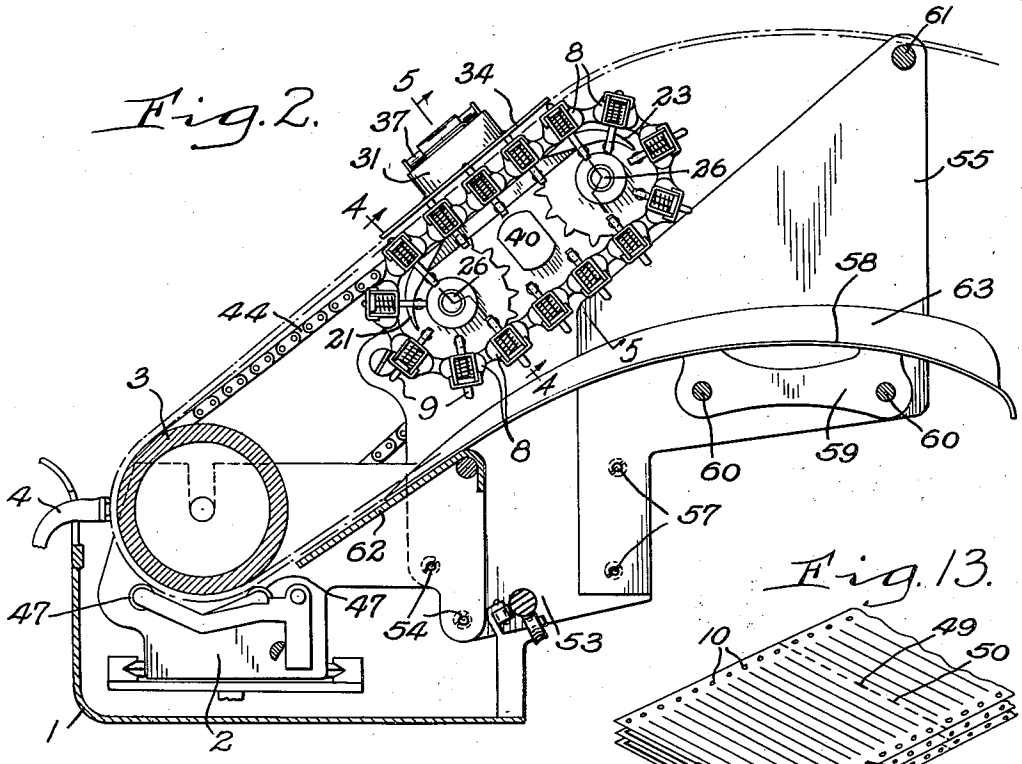
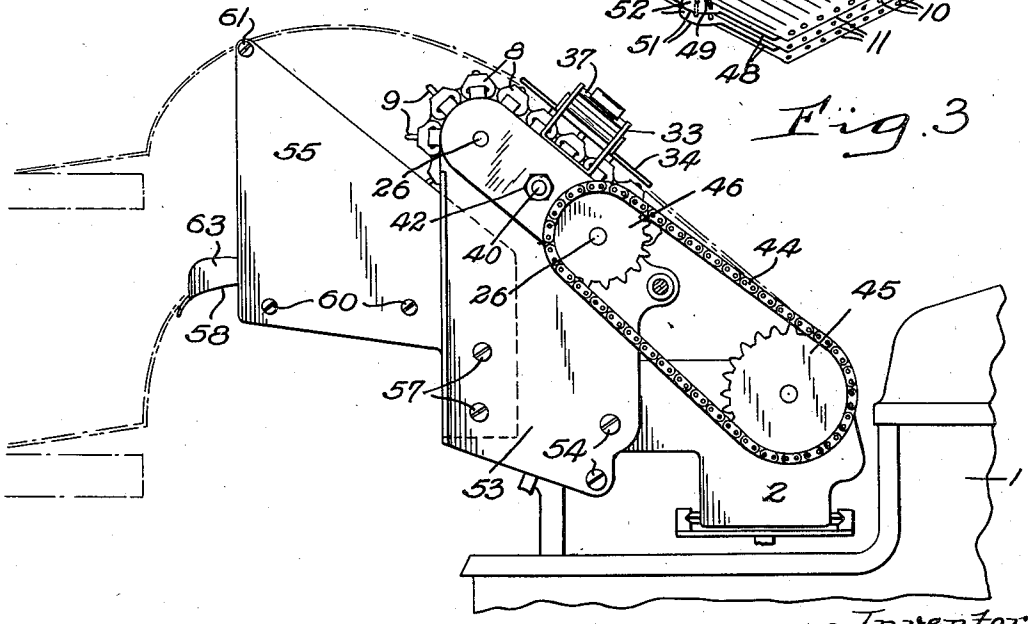


Fig. 13.

Fig. 3



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Nov. 7, 1939. C. R. MABON 2,179,156

TYPEWRITING MACHINE

Filed Sept. 25, 1936 3 Sheets-Sheet 3

Fig. 4.

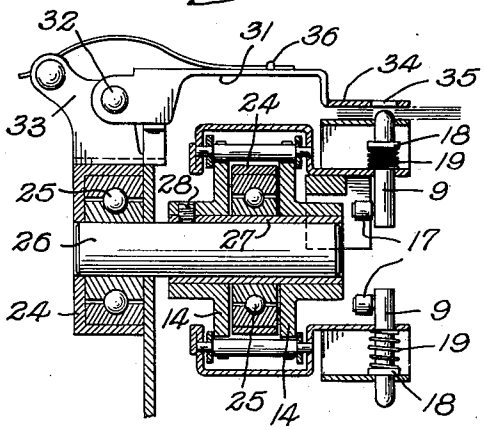


Fig. 5.

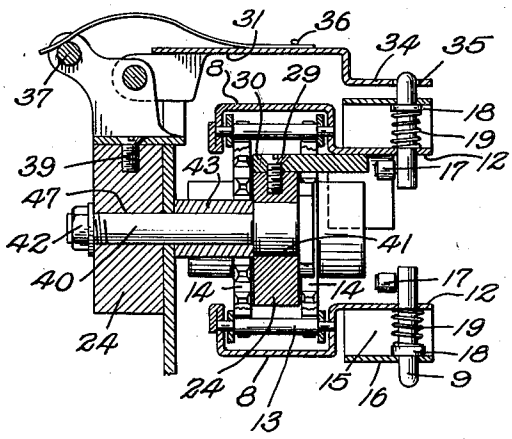


Fig. 6.

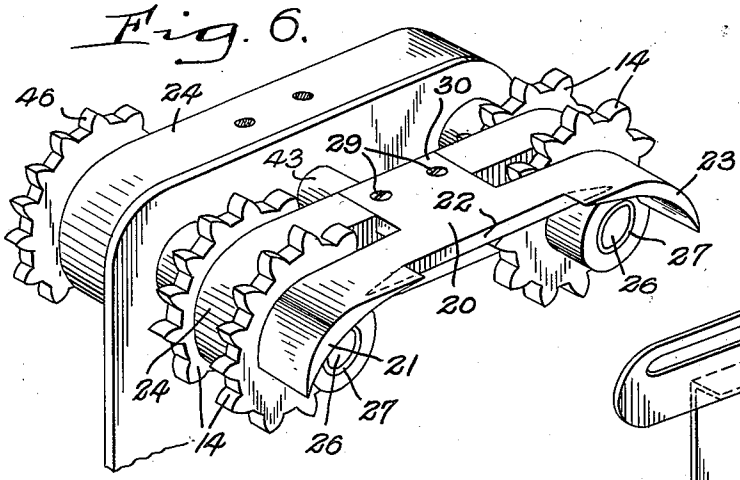


Fig. 7.

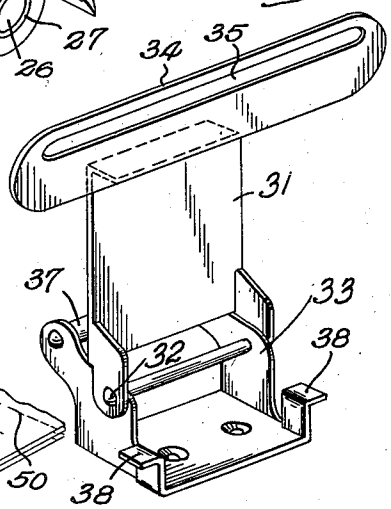
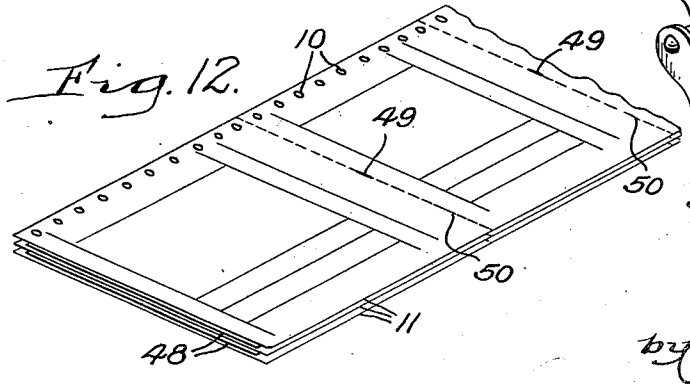


Fig. 12.



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Patented Nov. 7, 1939

2,179,156

UNITED STATES PATENT OFFICE

2,179,156

TYPEWRITING MACHINE

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Application September 25, 1936, Serial No. 102,553

17 Claims. (Cl. 197—133)

The invention relates to machines utilizable in recording data on paper or record strips, such as ordinary typewriting machines, billing machines, tabulating machines, teletype machines, autographic registers, and other recording machines, and has special relation to feeding and controlling the paper record strip or strips in the passage thereof through such machines.

It is an object of the present invention to provide paper feeding mechanism comprising a movable chain the links of which have a series of axially slidable feed pins adapted to enter and feed the paper. Another object is to cause a plurality of such pins to have simultaneous feeding engagement with the paper record strips along a straight path. Another object is to provide spring projected pins for the purpose stated, and means for withdrawing said pins and releasing the same for paper engagement, withdrawing the pins from paper engagement and releasing the pins again during movement of said chain. Other objects and advantages will appear hereinafter.

The invention consists in the novel construction and combinations of parts as set forth in the appended claims.

In the accompanying drawings—

Figure 1 is a perspective view of the invention as applied to an ordinary typewriting machine.

Figure 2 is a longitudinal vertical section of the same, with parts broken away, the strip feeding mechanism being shown in side elevation.

Figure 3 is a side view of the machine with parts broken away, the course of the paper being shown in broken lines.

Figure 4 is a detail section on the line 4—4, Figure 2, parts being shown as broken away.

Figure 5 is a detail section on the line 5—5, Figure 2, parts being shown as broken away.

Figure 6 is a detail perspective view of the frame support for the paper feeding means and the pin abutment means, showing the sprocket wheels for the chain and the driving sprocket for said chain, parts being broken away.

Figure 7 is a perspective view in detail of the spring impelled paper guide and retaining device, the spring being omitted, and this device being shown as raised to inoperative position.

Figure 8 is a detail perspective view of one link of the chain with its spring projected pin.

Figure 9 is a detail section of the same on the line 9—9, Figure 10.

Figure 10 is a detail section of the same on the line 10—10, Figure 9.

Figure 11 is a detail perspective view of a modified form of pin abutment means

Figure 12 and Figure 13 are detail perspective views of stationery that may be used, in part broken away.

This invention is related to those described in applicant's copending applications Serial No. 54,102 and Serial No. 96,516, and constitutes improvements over said prior copending applications.

In these drawings, the numeral 1 designates a typewriting machine of the ordinary type, said machine having a paper carriage 2, shiftable as customary, a cylindrical rotary platen 3 being mounted on said carriage to shift therewith. The type bars are shown in part at 4, the line spacing ratchet wheel 5 is controlled by a suitable line spacing pawl and a detent as customary, a finger wheel for manual control of the platen is shown at 6, and the character keys are shown at 7.

Located to one side of the platen and independent of contact therewith is the paper feeding mechanism, described as follows:

Alternate links 8 of an endless chain are provided with an endless succession of pins 9, a plurality of which have simultaneous engagement with a plurality of feed apertures 10 of paper record strips 11 to pull said strips from around the platen and feed the same along a straight path. The pins 9 of said chain are axially slidable and normally spring projected from their seats and means are provided to withdraw the pins against tension of their springs and release the same for paper engagement; to cause a plurality of the pins to have simultaneous feeding engagement with the paper along a straight path; and to withdraw the pins from paper engagement and release the pins again to complete the cycle of movement during movement of the chain, after which the pins are returned with the chain to first position, this means being described as follows:

Alternate links 8 of the chain have each a pin supporting part 12, laterally projecting therefrom, and each of said links may be bent from integral metal to provide side members of similar form, an outer transverse member connecting said side members, and said laterally projecting part or member. The transverse pivots 13 connecting the chain links have bearings at their ends in said side members and engage the duplicate chain-carrying sprocket wheels 14. The laterally projecting part 12 of each link 8 has side members 15 bent outwardly therefrom and a top plate 16, the pin 9 slidably engaging apertures of the parts 12 and 16, said pin being provided at its inner end with a lateral roller 17 and at its outer end portion with a collar 18, a coiled spring 19 surrounding said pin being located between said collar and the part 12 and causing the outer end portion of the pin to be normally projected from its seat. Each pin supporting bracket 12 with attached parts thus forms a housing for the spring 19, and provides a support in which the pin 9 is slidably positioned for projection and

retraction. The spring 19 is stressed between one wall of the housing and the collar or follower plate 18 which is secured to the pin. The pins 9 are cylindrical with rounded tips. A member 20 whereon the chain travels in part, forms a support for those chain links carrying pins engaged with the feed apertures of the paper record strips in feeding the same along a straight path, said member being provided at one end thereof with abutment means 21 engaged by the lateral rollers of the pins to withdraw the pins against the tension of their springs, after which said rollers pass out of engagement with said abutment means into a cutaway portion or notch 22 of said member to thereby release the pins which are then spring projected into paper engagement, said engagement with the paper being retained for the length of said notch, after which said rollers are engaged with another and similar abutment means 23 at the other end of said member acting to withdraw the pins from paper engagement against the tension of their springs, the pins being released upon passage of said rollers out of engagement with the last named abutment means and returning with the chain to first position.

The paper feeding mechanism is embodied in a self contained unit readily attachable to the paper carriage of the machine or other support, said unit being described as follows:

Parallel spaced brackets 24 are provided at the ends thereof with ball bearings 25 for the stub shafts 26 of the end sprockets 14 of the chain 8, each sprocket wheel 14 being in duplicate and fast to a sleeve 27, set screws 28 engaging aligned threaded apertures of the hubs of said wheels and said sleeve and bearing upon said stub shafts to make the parts rotate in unison. The aforesaid member 20 is secured to the inner of said brackets by screws 29 engaging an extension 30 of said member. Guide and retaining means for the paper are provided as a part of said unit, comprising a plate 31 pivoted at its outer end at 32 to a support 33, and at its inner end having a slotted foot 34, the slot 35 of which is long enough to receive the rounded tips of those pins 9 of the chain 8 which happen to be engaged with the feed apertures of the paper in feeding the same along a straight path, a spring 35 secured to said plate at 36 being curved upwardly over and slidably engaging a roller 37 of said support to thereby hold the spring tensioned to press the slotted foot 34 of said plate towards the paper record strips, an integral stop 38 of said support engaging said plate to limit the movement, said plate being adapted to be raised to inoperative position against the tension of its spring as seen in Figure 7. The support 33 is secured to the outer of said brackets 24 by screws 39.

A single attachment bolt 40 for said unit engages a center perforation 41 of each of said brackets and is provided with a nut 42 threaded thereon to clamp said unit securely in position relative to a standard or other support to be described and the upper end of which in the present application fits between said brackets, said bolt also engaging a perforation of said standard, and a suitable spacing collar 43 being located between the inner of said brackets and said standard, as seen in Figure 5.

The stub shafts 26 of the sprocket wheels 14 engage perforations of said standard, as seen in Figure 4. In applying the aforesaid unit to the machine, the stub shafts 26 are first removed after suitable adjustment of the set screws 28, the parts lined up, and the stub shafts reinserted in position, after which the attachment bolt 40 is inserted in position.

The endless chain of the paper feeding means is shown as driven by sprocket chain 44, engaging a sprocket wheel 45 on the platen shaft and a sprocket wheel 46 on the shaft of the forward sprocket wheel of the paper feeding means. Obviously a gear drive may be substituted.

The usual paper feed rollers 47 contacting the platen are shown as moved to inoperative position in Figure 2, the feeding mechanism for the paper record strips disclosed herein dispensing with the need of such feed rollers, when desired.

It is preferred to utilize the paper strip feeding mechanism disclosed herein for the feeding of a record strip having a series of preformed feed apertures, and whereas pin feed mechanism for coaction with both margins of the record strips may be used, as seen in Figure 13, it is preferred to arrange the pin feed mechanism for coaction with but one margin of the record strip as seen in Figure 12. By so doing, practically the full width of the machine is available for consideration and manipulation of the record strips, and also record strips of different widths may be employed without altering the position of the pin feeding mechanism.

Referring to Figure 12, three relatively superposed record strips 11 are shown, such strip assemblage having two interleaved transfer or carbon strips 48, the transfer strips being narrower than the record strips. In each of the record strips is a row or series of feed apertures 10, the record strips having each a series of similar printed forms underlying one another in registered or aligned relation when the feed apertures 10 of the forms are in superposed registry. There is but one series of feed apertures 10 in the record strips of Figure 12, the carbon strips 48 being disposed laterally out of registry with the feed apertures 10, and the respective strips being independent one of another.

In Figure 13, the printed forms and feed apertures have the same relation to each other as explained in connection with Figure 12, but in this instance the feed apertures occur at both margins of the strips. The carbon strips of Figures 12 and 13 may be of full width and provided with feed apertures if desired. In the showing of Figures 12 and 13, staples 49 serve to attach the several superposed strips together, these attaching devices being distributed at intervals throughout the lengths of the assemblage of strips, and preferably being on the transverse weakening lines 50, so that when the tear off is made along such lines, the staples will drop out. As shown in Figure 13, the carbon sheets may be provided with arcuate central slits 51 around one side of and spaced from said staples, said slits forming part of said weakening lines, and when a tear off is made along a weakening line those parts of the carbon sheets included by said slits will remain as tabs 52 extending beyond the ends of the paper strips at the tear off, the staples remaining in position connecting the carbon sheets so that the latter may be withdrawn all together by grasping said tabs with the fingers. In Figure 12 the strip attaching means, as the staples 49, may be omitted if desired.

In the use of stationery such as shown in Figure 13, the paper feeding means described

herein may be duplicated, this however not being preferred.

In order to support the paper feeding mechanism, a standard **53** is secured to one end of the paper carriage of the machine by screws **54**, the attachment bolt **40** and the stub shafts **26** engaging perforations of said standard as explained. Should the paper feeding means described herein be duplicated at the other end of the paper carriage, the standard **53** would be duplicated also, and in this case the stub shafts **26** would extend across the width of the said carriage.

In order to support the paper guides to be described, spaced standards **55** are secured to each end of the paper carriage **2**, one of said standards being bolted directly to the end of said carriage at **56**, and the other standard being screwed to the standard **53** at **57**.

The paper guides **58**, of which there are three as shown, one at each end of the paper carriage and one in the middle, spaced from one another, have each lateral depending flanges **59**, provided with perforations engaged by lower cross rods **60**, the latter connecting the standards **55**, and the paper guides being slidably adjustable along said cross rods. An upper cross rod **61** connecting said standards **55** is spaced rearwardly of the paper feeding means and serves as a support for the paper record strips as they are fed rearwardly out of the machine, as seen in Figure 2.

The standards **55** being connected by the aforesaid cross rods, a rigid framing is formed, which is secured to the standard **53** as stated to form a rigid whole, so that the paper feeding mechanism and the paper guides are all mounted on a framing readily attachable as a unit to the paper carriage of the machine.

The paper guides **58** have curved bottoms which rest at their forward ends upon the rear ends of the usual paper table **62** of the carriage to form rearward extensions thereof. The lateral of these paper guides have each an outer lateral upstanding flange **63**, and said guides being adjustable as stated, the flanges thereof are adapted to abut against the opposite edges of the paper record strip assemblage to retain the latter in proper position engaged with the pins of the paper feeding means during endwise shifting of the carriage, such shifting being subject to abrupt halts which might otherwise disturb such engagement.

In order to hold the paper record strip assemblage down lightly to the said guides **58**, each of the lateral guides may be provided with an attachment comprising a spring clasp **64** engageable over the upstanding flange of the guide and having a lateral extension **65** overlying and spaced from the guide to form a guideway for the paper.

In Figure 11 of the drawings is shown a modification of the member **20** and its pin abutment means comprising a continuous flange **20a**, having a continuous grooved track **21a** wherein travel the lateral rollers of the pins **9** of the chain. In this modification, the pins **9** have no springs, the lateral rollers of the pins engaging the cam **21b** at one end portion of said track to thereby raise said pins from their seats, the pins remaining projected or raised during passage of said rollers along the straight raised or offset portion **21c** of said track, and being withdrawn by engagement of the rollers with the cam **21d** at the other end portion of the track.

It will be observed that the pin supports or plates **12** are disposed in a plane inside the line of centers though the pivotal axes **13** of the links (see Figures 2, 8, 9 and 10). It is to be understood however that plates **12** may be disposed in the plane of said line of centers and that several advantages in respect to simplicity of construction of the feed mechanism and strip feeding and controlling of the strip or strips follow whether the plates **12** be disposed at one or the other of the planes mentioned. However, when the above described construction is associated with the pin supports **12** in planes inside that of said line of centers, as illustrated, the feeding of the strips, and especially the feeding of relatively superposed strips, is controllable to greater advantage, and alignment of superposed strips at the printing line of the platen may be better perfected.

The chain of links is one form of flexible pin-guiding band, which passes around the longitudinally spaced sprocket wheels **14**, the line of connection or line of stress longitudinally through the band, corresponding to the line following around the band through the pivotal axes of the links. In the chain type of band illustrated this line of connection also corresponds to what may be termed the pitch line of the chain, being the same as the line of centers hereinbefore mentioned. And it will be seen that the pin supports **12** are located at points inside of the line of centers or line of stress of the flexible band or chain. Since the feed pins as shown are mounted to one side of the flexible band or chain it is more nearly accurate to say that the pin supports **12** are located at points inside of the pitch surface. The pitch surface may be defined as an imaginary surface lying substantially perpendicular to the longitudinal axes of the feed pins and passing through and defined by the pitch line or line of stress.

It will also be noted that each pin support **12** has the two walls **15** upstanding from the plate **12**. The plate or wall **16** has an aperture in axial alignment with the pin **9** and the plates **16** and **12** provide inner and outer pin controlling walls between which the pin **9** is axially shiftable, said pin having a part extending through an opening in the inner plate **12**, the roller or cam follower **17** laterally projecting from the pin **9** in a plane inside that of the plate **12**. The collar **18** on the pin **9** is between the walls **12** and **16** and limits the extent of outward movement of the pin **9**. The plate **16** provides a strip support in a plane outside that of the pin support **12**, and, during feeding, the strips rest upon this outer plate **16**, as shown in Figure 4. The respective links of the chain, together with the plate **12** and the two upstanding walls **15** are preferably made of integral material bent to shape, the two upstanding walls **15** having the outer plate **16** in fixed relation thereto.

During travel of the band or chain, the pins **9** are given axial movement transversely of the supports **12**, the spring **19** effecting such movement outwardly of the chain at a predetermined interval in the travel of the pin, the inward movement of the pin being effected by the part **21** of the element **20** hereinbefore mentioned.

In the modification illustrated in Fig. 11, the cam groove is continuous and cooperates with the follower **17** to move each pin axially outwardly and inwardly of the band in a positive manner, which may be without the assistance of any spring.

By disposing the pin supporting plates **12** at points inside of the line of connection or pitch

surface of the chain, the free terminal of the pin 9 which receives the strip apertures thereover may be located as desired relative to the pitch surface of the chain, and room is provided for positioning the cam follower 17 and that portion of the pin beneath the strips, well inside of the pitch surface.

I claim:

1. In a machine of the character described in combination, strip feeding mechanism comprising a series of axially slidable feed pins adapted to enter and feed a strip, a flexible chain on which said pins are mounted, carrying means for said chain, and means for thrusting said pins into strip engagement and for withdrawing the pins from such engagement during movement of said chain, each alternate link of the chain having a lateral extension provided with upper and lower apertured members the apertures of which are engaged by the pin of the link.

2. In a machine of the character described in combination, strip feeding mechanism comprising an endless series of axially slidable spring projected feed pins adapted to enter and feed a strip, a flexible endless chain on which said pins are mounted, carrying wheels for said chain, and means for withdrawing said pins against the tension of their springs and releasing the same for strip engagement, withdrawing the pins and releasing the same again during movement of said chain, each alternate link of said chain having a lateral extension provided with upper and lower apertured members the apertures of which are engaged by the related pin.

3. In a machine of the character described, in combination, strip feeding mechanism comprising an endless series of axially slidable feed pins adapted to enter and feed a strip and having lateral rollers, an endless flexible chain on which said pins are mounted, carrying wheels for said chain, and means for thrusting said pins into strip engagement and for withdrawing the pins from such engagement during movement of said chain to cause a plurality of said pins to have simultaneous feeding engagement with the strip along a straight path including an endless track engaged by said rollers and having at the end portions thereof abutment cams for said rollers and an outwardly offset straight abutment portion connecting said abutment cams.

4. In a machine of the character described in combination, a series of axially slidable feed pins adapted to enter and to feed a strip, a flexible, pin-guiding band movable to effect feed movement of said pins, and having a series of supports on which said pins are slidably mounted respectively, the respective pin-supports disposed inside the pitch surface of said band, and means, including a continuous cam groove and a cooperative cam follower on each said pin, cooperable to slide each pin axially outwardly and inwardly of said band during its travel with said band.

5. In a machine of the character described in combination, a series of axially slidable feed pins adapted to enter and to feed a strip, a flexible, pin-guiding band movable to effect feed movement of said pins, and having a series of pin supports on which said pins are mounted respectively, the respective pin supports each having a part disposed inside of the pitch surface of said band and having a part forming a strip support positioned outside of said first mentioned pin supporting part, said inside and outside parts of each pin support being spaced apart to form a spring housing, and a controlling spring in each of said spring housings and operatively connected to the respective pin.

6. In a machine of the character described in combination, a series of axially slidable feed pins adapted to enter and to feed a strip, a flexible, pin-guiding band movable to effect feed movement of said pins, and having a series of pin supports on which said pins are respectively slidably mounted, each of said pin supports having inner and outer pin controlling walls, each said pin being axially slidable between said walls and having a laterally projecting cam follower, said walls each having an aperture in axial alignment with and receiving said pin, said cam follower of each pin lying inside of said inner wall, each said pin having a collar between said walls, and a spring interposed between said collar and said inner wall.

7. In a machine of the character described in combination, a series of axially slidable feed pins adapted to enter and to feed a strip, a flexible, pin-guiding chain of connected links movable to effect feed movement of said pins, and having a series of pin supports on the respective chain links and each having a laterally projecting plate and walls upstanding from said plate, said link, plate and walls being of integral material bent to shape, and each said feed pin being movably mounted between said walls and having a part extending through said plate.

8. In a machine of the character described in combination, a series of axially slidable feed pins adapted to enter and to feed a strip, a flexible, pin-guiding chain of connected links movable to effect feed movement of said pins, and having a series of pin supports on the respective chain links and each having a laterally projecting plate and walls upstanding from said plate, said link, plate and walls being of integral material bent to shape, a second plate opposite and spaced from said first mentioned plate and in fixed relation to said walls, and each said feed pin being movably mounted between said walls and having a part extending through said first mentioned plate, said second plate having an aperture through which said pin is adapted to project.

9. In a machine of the character described in combination, strip feeding mechanism including a series of projectable and retractable feed pins adapted to enter and feed a strip, a chain of flexibly connected links on which said pins are mounted, driving means for said chain, a supporting rail having a section positioned along the path of strip feed for supporting the chain links having the feed pins in strip feeding engagement, cam abutments positioned at the opposite longitudinal extremities of said supporting rail, and operating connections for each of said pins cooperating with said cam abutments during feed travel of said chain to control the projection and retraction of said feed pins to and from strip feeding engagement.

10. In a machine of the character described in combination, strip feeding mechanism including a series of projectable and retractable feed pins adapted to enter and feed a strip, a chain of flexibly connected links on which said pins are mounted, driving means for said chain, a supporting rail having a section positioned along the path of strip feed for supporting the chain links having the feed pins in strip feeding engagement, cam abutments positioned at the opposite longitudinal extremities of said supporting rail, and operating connections for each of said pins cooperating with said cam abutments during feed travel of said chain to control the pro-

jection and retraction of said feed pins to and from strip feeding engagement, said operating connections including a cam follower connected to each feed pin and operatively engaging said cam abutments.

11. In a machine of the character described, in combination, strip feeding mechanism including a series of feed pins adapted to enter and feed a strip, a chain of flexibly connected links on which said pins are mounted, each of said pin carrying links having a pin supporting bracket extending laterally from the chain into a position overlapping the strip path, said pins being mounted on the respective said brackets for projection into strip engaging position and for retraction, a spring carried by each said supporting bracket and having operative connection with the corresponding pin, and automatic means operating in coordination with said springs for controlling the projection and retraction of said pins on said brackets during feeding movements of said chain.

12. In a machine of the character described, in combination, strip feeding mechanism including a series of feed pins adapted to enter and feed a strip, a chain of flexibly connected links on which said pins are mounted, each of said pin carrying links having a pin supporting bracket extending laterally from the chain into a position overlapping the strip path, said pins being mounted on the respective said brackets for projection into strip engaging position and for retraction, a spring carried by each said supporting bracket and having operative connection with the corresponding pin, automatic means operating in coordination with said springs for controlling the projection and retraction of said pins on said brackets during feeding movements of said chain, and a spring housing carried by each said supporting bracket for housing the corresponding pin controlling spring.

13. In a machine of the character described, in combination, strip feeding mechanism including a series of feed pins adapted to enter and feed a strip, a chain of flexibly connected links on which said pins are mounted, each of said pin carrying links having a pin supporting bracket extending laterally from the chain into a position overlapping the strip path, said pins being mounted on the respective said brackets for projection into strip engaging position and for retraction, a springcarried by each said supporting bracket and having operative connection with the corresponding pin, a supporting rail having a section positioned along the path of strip feed in supporting relation with said supporting brackets, and cam means positioned in the vicinity of one extremity of said supporting rail and having operative connection with said pins and operating in coordination with said springs for controlling the projection and retraction of said pins on said brackets during feeding movements of said chain.

14. In a machine of the character described, in combination, strip feeding mechanism including a series of feed pins adapted to enter and feed a strip, a chain of flexibly connected links on which said pins are mounted, each of said pin carrying links having a pin supporting bracket extending laterally from the chain into a position overlapping the strip path, said pins being mounted on the respective said brackets for projection into strip engaging position and for retraction, a spring carried by each said supporting bracket and having operative connection with the corresponding pin, a supporting rail having a section positioned along the path of strip feed in supporting relation with said supporting brackets, and cam means positioned in the vicinity of each of the opposite longitudinal extremities of said supporting rail and cooperating with the pins to retract them against spring resistance at predetermined positions in the feeding operation.

15. In a machine of the character described, in combination, strip feeding mechanism including a series of feed pins adapted to enter and feed a strip, a chain of flexibly connected links on which said pins are mounted, each of said pin carrying links having a pin supporting bracket extending laterally from the chain into a position overlapping the strip path, said pins being mounted on the respective said brackets for projection into strip engaging position and for retraction, a spring carried by each said supporting bracket and having operative connection with the corresponding pin, a supporting rail having a section positioned along the path of strip feed in supporting relation with said supporting brackets, cam means positioned in the vicinity of each of the opposite longitudinal extremities of said supporting rail and cooperating with the pins to retract them against spring resistance at predetermined positions in the feeding operation, and a spring housing carried by each said supporting bracket for housing the corresponding pin controlling spring, each said feed pin being mounted for translatory movement with reference to one of said spring housings.

16. In a machine of the character described, in combination, strip feeding mechanism including a series of feed pins adapted to enter and feed a strip, a chain of flexibly connected links on which said pins are mounted, each of said pin carrying links having a pin supporting bracket extending laterally from the chain to a position overlapping the strip path but terminating in a free end disposed inwardly of the opposite longitudinal edges of the strip path, said pins being mounted on the respective said brackets for projection into strip engaging position and for retraction, a spring carried by each said supporting bracket and having operative connection with the corresponding pin, a spring housing carried by each supporting bracket for housing the corresponding pin controlling spring and providing a mounting for slidably supporting the respective feed pin, and automatic means having operative connection with said pins and operating in coordination with said springs for controlling the projection and retraction of said pins on said brackets during feeding movements of said chain.

17. In a machine of the character described, in combination, a series of axially slidable feed pins adapted to enter and to feed a strip, a flexible, pin-guiding band movable to effect feed movement of said pins, and having a series of pin supports on which said pins are respectively slidably mounted, each of said pin supports having inner and outer pin controlling walls providing a spring housing, each of said pins being axially slidable between said walls and having a laterally projecting cam follower, said outer wall having an aperture in axial alignment with and receiving said pin, a spring follower connected to each pin within the respective housing, and a spring in each said housing and cooperating with said follower for controlling pin movements.

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