(No Model.) 3 Sheets—Sheet 1.

C. SPIRO.

TYPE WRITING MACHINE.

No. 529,208. Patented Nov. 13, 1894.

Fig. 1.

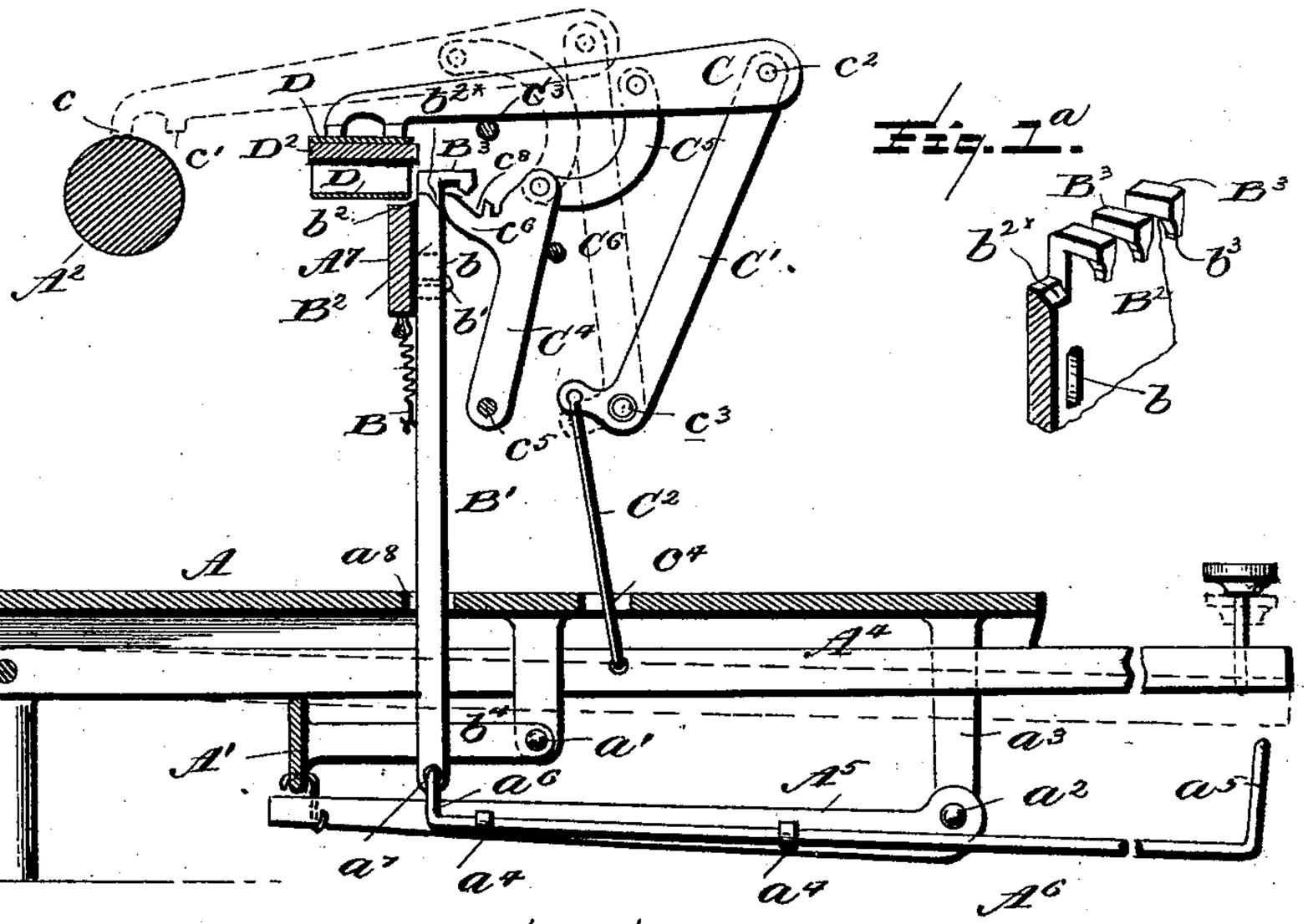


Fig. 1a.

Fig. 2.

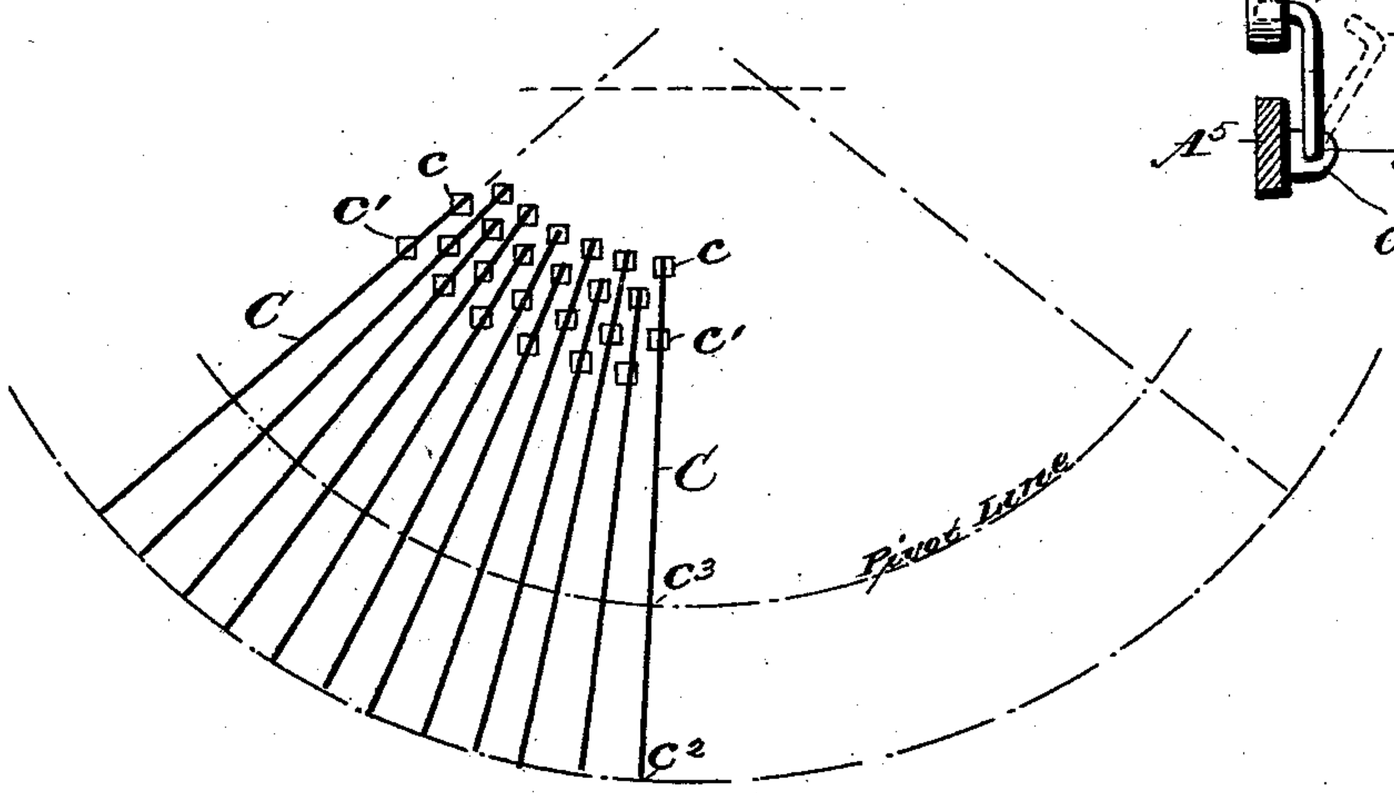
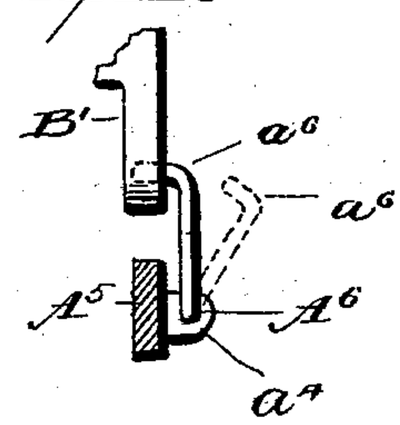


Fig. 1b.



Witnesses.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 2.

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Fig. 4.

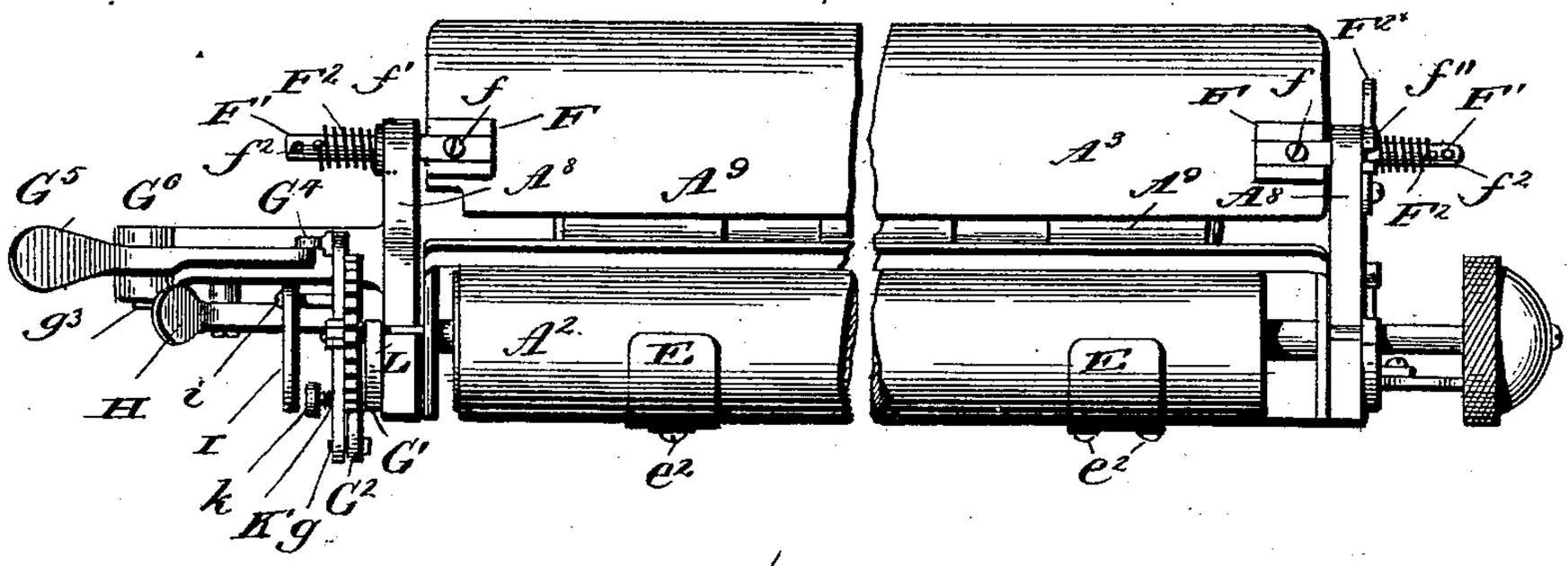


Fig. 6.

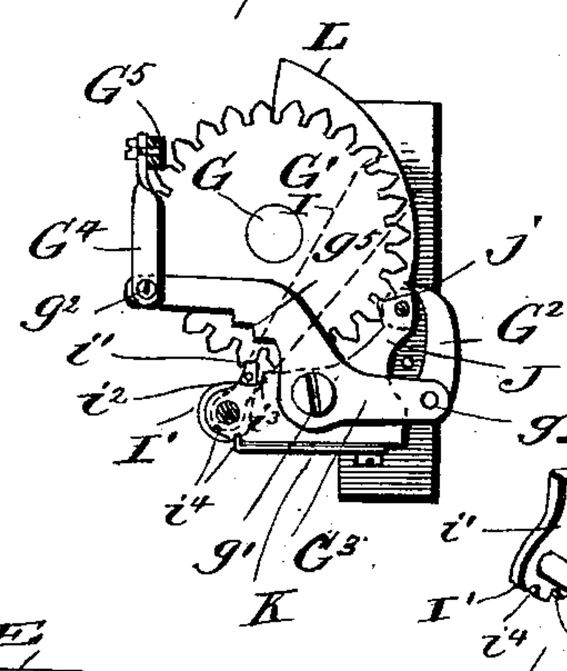


Fig. 5.

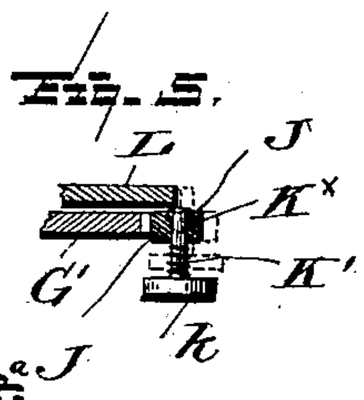


Fig. a.

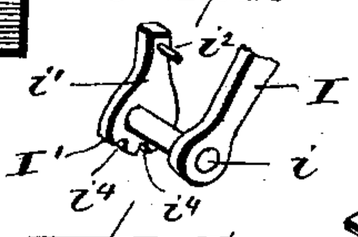


Fig. 8.

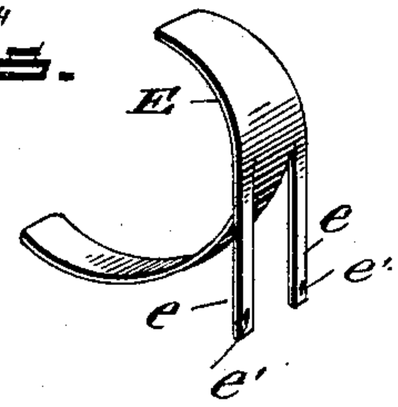


Fig. 7.

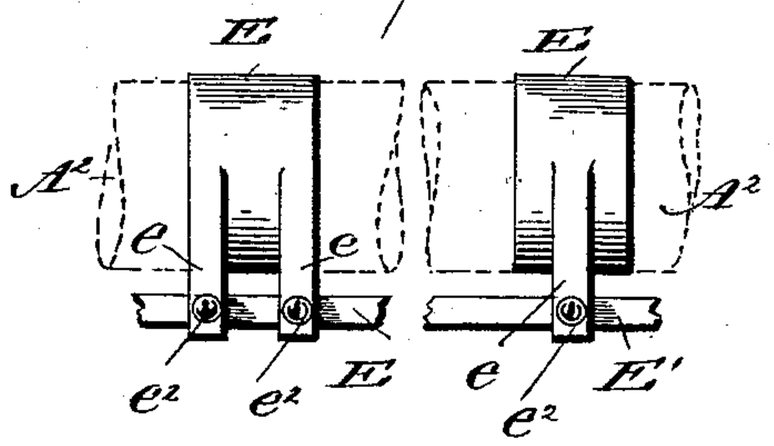


Fig. 9.

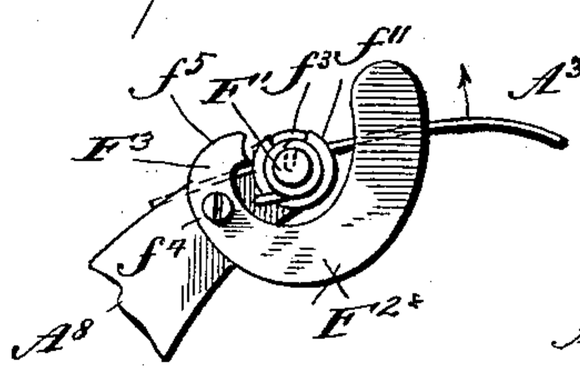
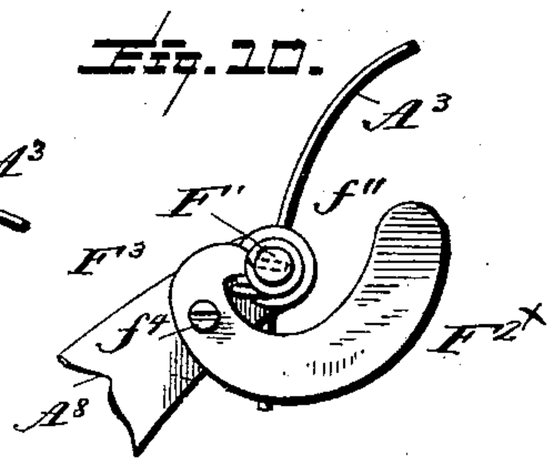


Fig. 10.



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TYPE WRITING MACHINE.

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Fig. 11.

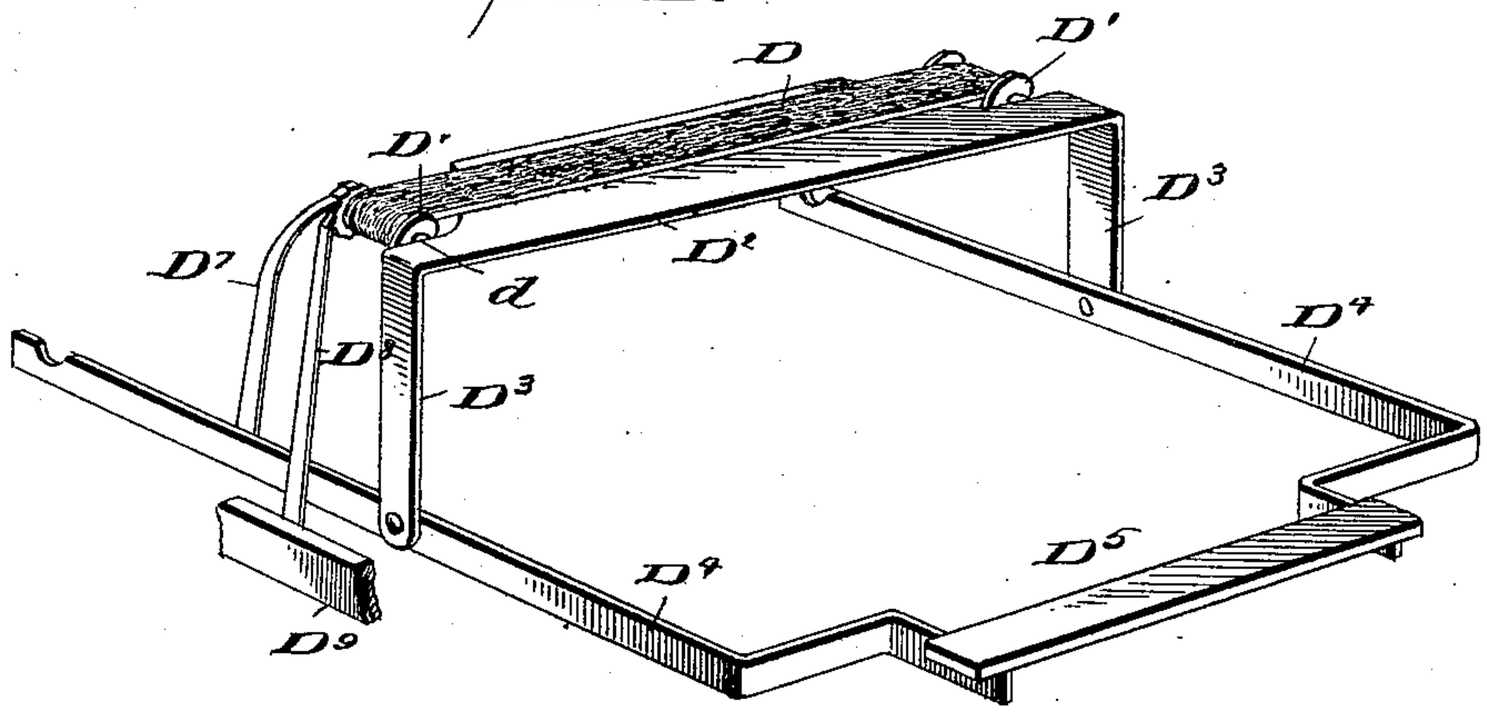


Fig. 12.

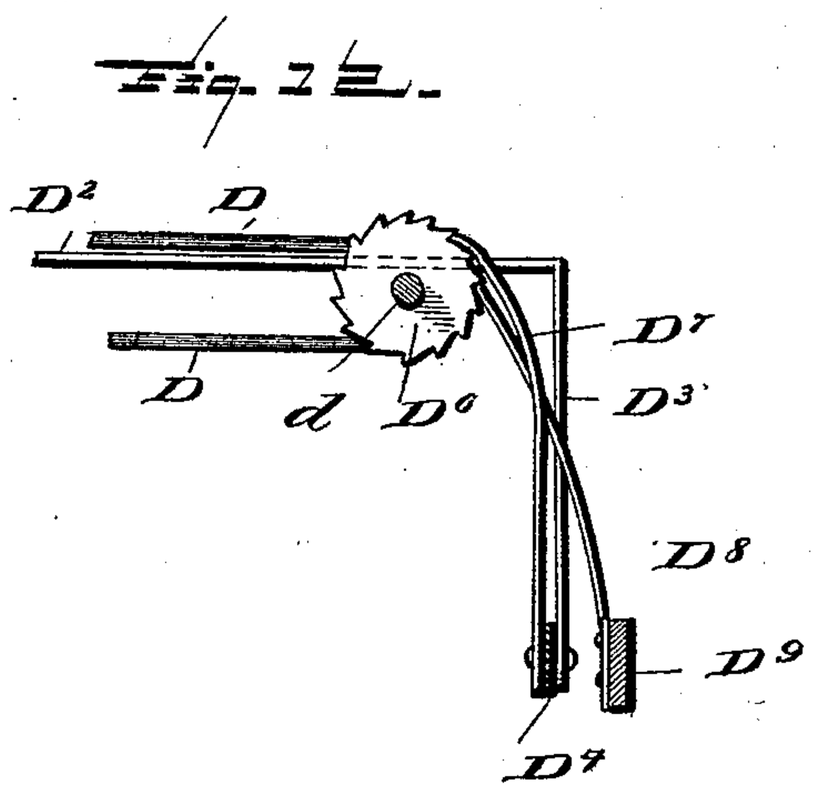
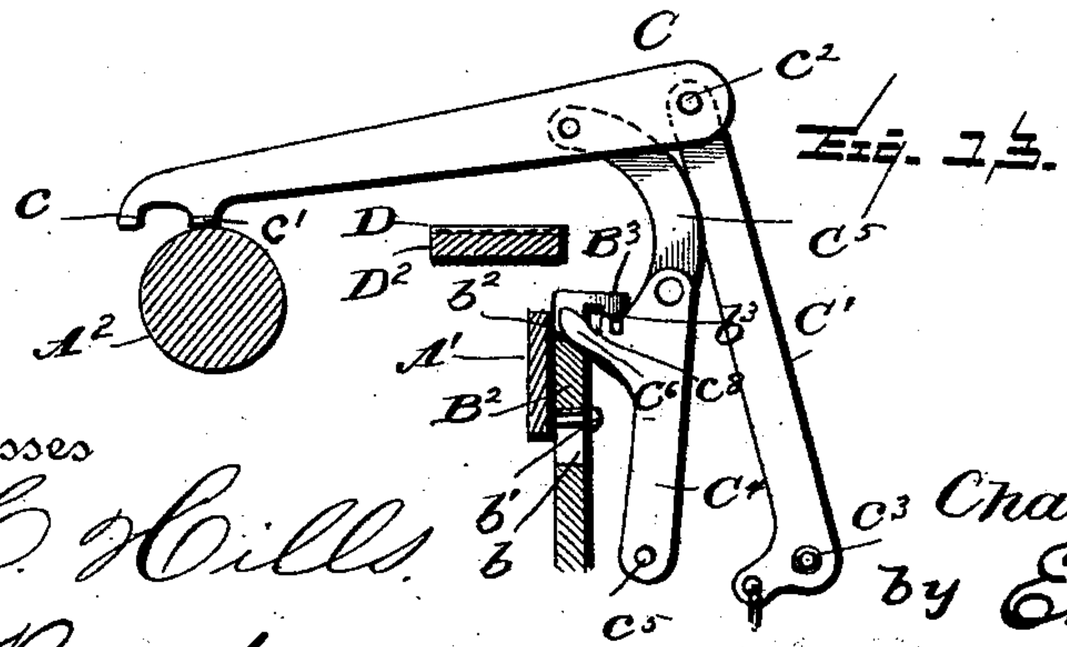


Fig. 13.



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UNITED STATES PATENT OFFICE.

CHARLES SPIRO, OF NEW YORK, N. Y.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 529,208, dated November 13, 1894.

Application filed December 7, 1892. Serial No. 454,365. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SPIRO, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in type-writing machines, and among the various objects in view are the following: to provide for the changing of the character say from upper to lower case or vice versa, without moving the carriage or platen; to provide simple means for permitting this change; to economize in space occupied by the ink pad as well as in the pad itself; to provide a movable ink pad actuated to change its position at predetermined intervals; to so mount the paper roller or platen that it can be revolved in either direction at any and all times without moving the dog or any other part; to so mount the dogs that they can be thrown out to permit of turning of the paper roller or platen at will to adapt the machine for writing upon ruled paper where the space between the lines does not conform to the feed of the roller in the usual way; to furnish an improved paper guide which shall have sufficient resiliency in all directions to properly hold the paper and afford perfect feed when several sheets are employed or in case a wrinkle or other unevenness occurs in the paper; and to provide improved means for holding the paper table in either of its positions.

It has for a further object to improve generally the make-up of the machine whereby it is rendered more efficient, more easily operated, and less liable to become injured from careless handling.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a side elevation of a portion of a type-writing machine with some of my present improvements shown in side elevation and parts in section, the base of the machine also being shown in section. Fig. 1^a is a perspective of a portion of the movable plate with its overhanging flange. Fig. 1^b is a detail partly in section and partly in elevation showing the shifting rod in its two positions with relation to the bar with which it co-operates. Fig. 2 is a diagrammatic view showing the relative positions of the type and type levers. Fig. 3 is a plan of the platen and paper table and the improvements in intimate connection therewith. Fig. 4 is an end elevation of Fig. 3 with portions removed. Fig. 4^a is a perspective detail which will more particularly be hereinafter referred to. Fig. 5 is a cross section through the platen and its support showing one of the paper guides in edge view. Fig. 6 is a detail in section showing the pin for holding the dog out of engagement with the ratchet on the end of the paper roller. Fig. 7 is a detail showing two forms of resilient bands to serve as paper guides. Fig. 8 is a perspective view of one of the paper bands removed. Fig. 9 is an end elevation in detail showing the means employed for holding the paper table, with the latter in its lowermost position. Fig. 10 is a similar view of the same parts with the paper-table in its elevated position. Fig. 11 is a perspective view of the endless inking band or pad and its actuating devices. Fig. 12 is a detail partly in side elevation and part in section, of the parts shown in Fig. 11. Fig. 13 is a detail partly in elevation and partly in section showing the position of the various parts of the type movement when printing with the other character from that indicated in Fig. 1.

Like letters of reference indicate like parts throughout the several views in which they appear.

All of the figures are upon the same scale, except Figs. 6 and 12 which are somewhat enlarged.

All of the improvements hereinafter specified need not be present in the one machine; any one or more of them may be employed without the others; parts may be used without the whole, and modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

Referring now to the details of the drawings by letter, A designates the base of the machine of known construction; A′, the universal bail; A^2, the platen; A^3, the paper-table and A^4 one of the key levers. The key levers are pivoted at one end as at a and are arranged to actuate the universal bail in the usual manner and as seen in Fig. 1. The universal bail is pivoted as at a', see Fig. 1, to a depending arm or lug, or any fixed part, and may be of any approved form.

A^5 is a substantially horizontal part pivoted at its front end as at a^2 to some fixed part of the machine, as a depending portion or lug a^3 as seen in Fig. 1 beneath the top of the base and at its other end it is connected with the universal bail in any suitable manner so as to move therewith. Upon this arm A^5 is mounted a shaft or rod a^6 which is mounted thereon so as to be given a partial revolution in its bearings, which in this instance are shown as simple staples or eye bolts a^4 through which the said shaft or rod passes. The outer end of this rod or shaft is turned at substantially a right angle to its length as seen at a^5 in Fig. 1 to form a convenient means whereby it may be given the necessary rotary movement and its other end is turned upward as seen at a^6 and thence horizontally to form the short arm a^7 as is best seen in Fig. 1 which short arm or hook is designed to be engaged in a hole or other provision in the lower end of a vertical arm or bar which will soon be described and the object of which will be set forth. This bar is mounted to slide vertically through an opening a^8 in the base as seen in Fig. 1 and is held normally at its upward limit by a spring B connected at one end to said bar B′ and at its other end in any suitable manner to the plate A^7 of the machine as seen in Fig. 1. This bar is a part of or is securely affixed to a curved plate B^2 arranged in front of the part A^7 and provided with vertical slots b to receive pins b' or other means upon the plate A^7 to guide the curved plate B^2 in its vertical movements. There may be as many of these guiding pins employed as may be deemed necessary. This plate B^2 has at its upper end a series of horizontal flanges B^3 which are separated by suitable openings or passages $b^{2\times}$ wide enough to permit of the passage of the lateral portions c^5 of the arms C^4 as hereinafter described. Each flange is provided with a depending tooth b^3 as seen in Fig. 1^a. The front edge of the lower wall of each passage is inclined to the front of the machine as seen in Figs. 1 and 1^a. The bar B′ has near its lower end an opening b^4 to receive the hook a^7 of the rod A^6 as indicated in Fig. 1. When this hook is engaged in said hole, the rod A^6 being carried by and movable with the arm A^5 which moves with the universal bail, at each depression of a key-lever the bar B′ will, through the medium of the devices above described, be depressed. As soon as pressure is removed from the key lever the bar B′ and of course the plate B^2 carried thereby will be returned to their normal positions being aided in such movement by the spring B.

C is a type-bar provided with two characters c c' and this type bar is pivotally connected at its forward end as at c^2 with the elbow lever C′ which is pivoted at its elbow upon a horizontal pivot c^3, the short arm of the lever being pivotally connected with the key-lever by a ligament C^2 which passes through an opening c^4 in the base as seen in Fig. 1. A stop C^3 is provided to limit the downward movement of the type bar. The type bar is pivotally connected with the arm C^4 pivoted at c^5 at its lower end, the connection between this arm C^4 and the type bar being a link or ligament C^5 which is shown as curved but not necessarily of that shape. This arm C^4 is provided with a lateral portion or offset c^6 which is formed with a notch c^8 as seen in Fig. 1. A stop C^6 is provided to limit the backward movement of the arm C^4.

In the foregoing description I have referred to but one key lever and one type bar with their connections but it will of course be understood that all of the key levers and type bars are connected in a similar manner and designed to operate in the same way.

The operation of the parts hereinbefore described is as follows:—Ordinarily the rod A^6 is turned as shown by dotted lines in Fig. 1^b, so that its hook portion is out of engagement with the hole in the rod or bar B′ so that when the key lever is depressed the bar B′ and its plate B^2 are not actuated and thus the depression of the key lever moves the type bar, the arm C′, and connection C^5 into the position in which they are shown by dotted lines in Fig. 1, moving the type from the inking pad and throwing the lower case or type c against the platen A^2. When pressure is removed from the key lever the parts return to their normal position. Shown in full lines. When it is desired to write caps or upper case characters the rod A^6 is turned so as to engage its hook portion in the opening in the bar B′ so that when a key lever is depressed the bar B′ will be depressed therewith through the medium of the bail A′, bar A^5 and connections hereinbefore specified. The bar B′ being moved downward moves therewith the plate B^2 so that the lateral portion c^6 of the arm C^4, being relieved of its abutment on the plate B^2 is free to move through a corresponding opening $b^{2\times}$ of the plate B^2 until it engages the plate A^7. This increased movement permits of further movement of the type bar C so as to bring the character c' against the platen. (Fig. 13.) As the arm C^4 is moved rearward the abutment B′ being depressed, the extension c^6 of said arm enters the passage $b^{2\times}$ in the said abutment and a tooth b^3 enters the notch in the extension c^6 of said arm and the type bar is locked against a sliding movement on the ink pad and upon its return movement against a sliding movement on the platen,

thus preventing blurring, as the initial movement of the type end of the type bar must be in a vertical direction away from the inking pad or the platen but it is moved horizontally back to its normal position. The notch in the extension c^6 of the arm C^4 serves in conjunction with the depending tooth b^3 of the abutment to thus prevent the blurring. The inclined portion $b^{2\times}$ of the plate B^2 engages the under side of the lateral projection of the bar C^4 and gradually returns it to its position as the plate B^2 is returned to its normal position by the spring B after pressure is removed from the key lever.

D is the ink pad which consists of an endless band of suitable material mounted upon rollers D′ carried by shafts supported in a table or plate D^2 carried by the standard B^3 which are carried by the opposite bars D^4 to which the spacing key D^5 is connected.

D^6 is a ratchet on one of the shafts d which carries the roller and D^7 is a detent carried by one of the side bars D^4 and arranged to engage with the teeth of the ratchet to prevent rotation of the ratchet D^6 during the forward movement of the arm D^4 carrying the ink ribbon and its appurtenances, while D^8 is a pawl secured to some fixed part as for instance a portion D^9 of the frame D^9 of the machine as seen in Figs. 11 and 12. By this construction each time the spacing bar is depressed the ratchet is moved one notch and consequently the inking pad is moved a corresponding distance.

Referring now to Figs. 5, 7 and 8 E designates my improved platen paper guide which I form of spring material and support the same resiliently. It consists of a portion which encircles the platen for any required or preferred portion of its circumference preferably about two thirds as seen in Fig. 6 and provided with one or more arms e formed integral with the same by slitting or otherwise and these arms provided with perforations e' to receive the screws or other means e^2 by which they are secured to a portion e' of the carriage. By this construction the guide is resilient at all points and being also resiliently supported it will yield at the proper point or points to compensate for numerous thicknesses of paper or for any wrinkles in the paper or the carbon sheet employed and the paper will be fed evenly and smoothly. The paper guide may be formed with one or more legs or supports as may be found most desirable. Both forms are seen in Fig. 7.

A^9 is the paper guide roller. The paper table A^3 is mounted for partial rotation in the arms or end pieces A^8 of the carriage frame as seen in Fig. 3.

The preferable manner of mounting the paper table is as follows: Upon the upper face thereof at the end are secured the lugs F in which are held preferably by screws f the polygonal ends of the journals F′ which journals or pintles are supported in the said end pieces A^8 and are surrounded by collars f' and f'', the one on the left in Fig. 3, being fast on the end piece, their outer ends being provided with a hole f^2 to receive a suitable instrument for giving the same a partial rotation when desired. F^2 are springs surrounding these journals or pintles outside of the collars with one end of one connected to the collar f' and the other end held in the journal or pintle in any suitable manner as for instance by being inserted in a hole therein as seen in Fig. 3. When it is desired to adjust the tension of the spring all that it is necessary to do is to remove the screw f, remove the polygonal end from its seat in the lug and then give the journal a sufficient rotation and then replace the said polygonal end and the screw to hold the same in its adjusted position.

The collar f'' at the right hand side of the machine is provided upon its upper portion with a notch f^3 as seen in Figs. 3 and 9 and loosely pivoted as upon a pivot f^4. On the end plate A^8 of the carriage frame is a gravity pawl $F^{2\times}$, the short arm F^3 of which is provided with a projection or detent f^5 as seen best in Fig. 9. The spring f^2 at its end has one end connected to the end piece A^8 and the other to the journal as shown. Normally when the paper table is in its substantially horizontal position as seen in Fig. 9 this notch in the collar which is fast upon the journal of the paper table is uppermost and free of the projection on the gravity pawl. When it is desired to turn the table up into the position in which it is shown in Fig. 10 to make corrections or for other purposes all that is necessary to do is to grasp it with the fingers and move it in the direction of the arrow in Fig. 9. As it reaches the vertical position as seen in Fig. 10 the projection on the short arm of the gravity pawl falls into the notch of the collar and automatically locks the paper table in its elevated position. This brings the paper more nearly into a vertical position when it can be better reached by the operator and a better erasure made with greater ease and without the necessity of the operator leaving his seat. To return the table to its normal position all that is necessary is a slight upward pressure on the under side of the long arm of the pawl which disengages the projection of its short arm from the notch in the collar when the spring F^2 will throw it into its horizontal position.

The platen journals are removably held in their bearings on the carriage in any suitable manner which it is not deemed necessary to describe in this application. Upon one end of said journal G is a ratchet G′ with which engages the pawl G^2, pivotally mounted as at g on the rock arm G^3 pivoted at g' to some part of the carriage frame and its other end having pivotally connected thereto as at g^2, the arm or link G^4 which is pivotally connected with the thumb lever G^5 which is pivoted at its elbow as at g^3 to a projection G^6 on the base of the carriage frame so that movement of this lever or thumb piece moves the

pawl and causes it to engage the ratchet and thus turn the paper roll.

H is the thumb piece for throwing the feed pawls out of engagement with the rack bar to permit of the return of the carriage.

The arm G^3 is offset as seen in Fig. 4 and is provided with two steps or notches g^5 and in order to limit the throw of this arm to enable the pawl to turn the ratchets one or two teeth at a time as may be desired, I provide a lever I pivoted at i and its depending portion I′ is shown as having a lug i' adapted to engage one or the other of said steps and provided with a pin i^2 engaging a shoulder i^3 on the detent J. The said detent is adapted to engage the ratchet and has a projection or extension j as seen in Fig. 4 upon which rests the end of the pawl G^2 so that the latter is normally held out of engagement with the teeth of the ratchet to permit of rotation of the paper roller in either direction when desired. The lever I has a portion I′ extended below its pivot and formed with notches i^4 into one or the other of which is adapted to engage the point of a spring K secured on the under side of a detent J as seen in Fig. 4. In order to throw the detent entirely out of engagement with the ratchet to permit of free turning of the paper roller as for instance as when it is desired to write upon ruled lines I mount in the end of said detent an endwise movable horizontal pin $K^\times$ normally resting against the part L and having a head k and the shank of which is surrounded by a spring K′. When the lever I is pressed toward the operator the pin i' engages the shoulder i^3 of the detent and throws the engaging portion thereof outward sufficiently to permit the pin $K^\times$, to be pressed endwise by the spring K′ and engage against the outer face of one of the pivoted devices L of any suitable construction which serves to hold the journal of the paper roller in its bearing.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim is—

1. In a type writer, an endless ink pad mounted for movement vertically and in a straight horizontal plane upon relatively-fixed supports combined with a spacer carrying said pad and supports and a fixed detent, as set forth.

2. In a type writer, the combination with the spacer, of an endless ink pad mounted directly upon said spacer and means on the spacer engaging a ratchet on the pad spool, substantially as specified.

3. In a type writer, the combination with a spacer and a pawl mounted on the frame to engage the pad spools, of an ink pad mounted for movement in a straight, horizontal plane upon relatively-fixed supports on the spacer, substantially as specified.

4. In a type writer, the combination with a spacer, and relatively fixed rollers thereon of an endless movable ink pad mounted upon the relatively-fixed rollers on the spacer to move in a horizontal plane and a detent on said spacer, substantially as specified.

5. In a type writer, the combination with a spacer, of a table carried thereby and an endless ink pad mounted on the table for straight, horizontal and for vertical movement and designed to be given such movement by the actuation of the spacer, substantially as specified.

6. The combination with the spacer and spools and a detent mounted thereon, of an endless ink pad mounted on said spools and devices for rotating the spools by the depression of the spacer, as set forth.

7. The combination with the spacer and the frame, of a pawl on the frame, a detent on the spacer and an endless ink pad mounted on rollers on the spacer and one of which is provided with a ratchet, as set forth.

8. In a type writer, a resilient curved paper guide having integral resilient attaching portions extending from substantially mid length of the guide and separate therefrom, substantially as specified.

9. In a type writer, a pivotally mounted paper table having its journals removably and adjustably mounted, and provided with springs, as set forth.

10. In a type writer a paper table having lugs and rotatably mounted polygonal journals with springs, detachably held in said lugs, substantially as specified.

11. In a type writer, a paper table having lugs combined with journals for said table mounted in bearings in the frame with their inner ends polygonal in form and detachably held in said lugs and springs around said journals with means for adjusting the same, as set forth.

12. The combination with a pivotally mounted paper table, of a gravity pawl for holding the same in its elevated position, substantially as specified.

13. The combination with a pivotally mounted paper table having a journal with a notch, of a gravity pawl having portions to automatically engage said notch to hold the paper table elevated, substantially as specified.

14. The combination with a pivotally mounted spring-actuated paper table having a journal with notch, of a gravity pawl having portions to automatically engage said notch to hold the paper table elevated, substantially as specified.

15. The combination with the pivotally mounted paper-table and its spring actuated journals, one of which has a collar with a notch, of a pivotally mounted gravity pawl having a portion to automatically enter said notch to hold the table in its elevated position, as set forth.

16. In a type writer, the combination with the paper platen and its ratchet, of a detent, a pawl, means mounted on the detent for

throwing said detent and means for throwing both the pawl and detent out of engagement with the ratchet, substantially as specified.

17. In a type writer, the combination with a paper platen and its ratchet, of a pawl, a detent and means mounted on the detent for endwise movement, means for throwing said detent and means for holding both the pawl and detent out of engagement with the ratchet, as set forth.

18. The combination with the paper roller and its ratchet, detent and pawl, of means carried by and endwise movable on the detent for holding the detent and pawl supported by said detent out of engagement with the ratchet, as set forth.

19. The combination of a paper roller and its ratchet and detent and pawl, with a spring actuated pin, carried by the detent, substantially as specified.

20. The combination with the paper roller and its ratchet, detent and pawl, of a spring actuated pin carried by the detent and a lever mounted to actuate said detent, as set forth.

21. The combination with the paper roller and its ratchet, of a detent having a shoulder and a lever having a depending portion with a lug and a pin to engage said shoulder, substantially as specified.

22. The combination with the paper roller and its ratchet, the detent having a shoulder, a lever, a notched portion extended below its pivot and having a lug with pin to engage said shoulder and a spring on the detent to engage the notches thereof, as set forth.

23. The combination with the paper roller and its ratchet, of a pawl, a pivoted arm carrying said pawl and provided with offset having steps, a lever having a lug adapted to be thrown into the path of said steps and a pin and a detent having a shoulder for engagement with said pin as set forth.

24. The combination with the paper roller and its ratchet, of a pawl pivotally mounted on an arm having steps, a detent and a lever having a lug to be thrown into the path of the steps and a portion projecting laterally therefrom to engage said detent, substantially as specified.

25. In a type writer, the combination with the detent, of a lever mounted for movement independent of the detent, a laterally projecting endwise movable portion and a laterally projecting pin movable and the lever to engage the detent whereby they may be both moved together, substantially as specified.

26. The combination with the detent and a lever mounted to move therewith or independently thereof, a spring-actuated endwise movable pin on the detent and a spring on the detent engaging said lever, substantially as specified.

27. The combination with the type bar carrying a plurality of type and mounted for substantial horizontal movement and a relatively fixed platen, a vertically sliding abutment and intermediate pivoted means between the abutment and type bar and connected with the latter for limiting the throw of said type bar, substantially as specified.

28. The combination with a type bar carrying a plurality of characters, of a relatively fixed platen, a sliding abutment, and a lock carried by the type bar for engagement with said abutment, substantially as specified.

29. The combination with a type bar and a relatively fixed platen and universal bail, of an abutment arranged to be actuated by the universal bail, substantially as specified.

30. The combination with a type bar and a relatively fixed platen, of a sliding abutment having overhanging toothed flange and designed to be moved by the depression of a key lever, substantially as specified.

31. The combination with a type-bar, key lever and universal bail and a relatively fixed platen, of a movable abutment mounted for operation by the conjoint action of a key lever and universal bail, substantially as specified.

32. The combination with a substantially horizontal type bar and a relatively fixed platen, of a movable abutment, the universal bail and a connection between the bail and abutment as set forth.

33. The combination with a substantially horizontal type bar and a relatively fixed platen, of a movable abutment, the universal bail and a detachable connection between the bail and abutment, as set forth.

34. The combination with a type bar and platen, of a movable abutment, universal bail, and a pivoted part actuated by the bail and having connection with the abutment, substantially as specified.

35. The combination with a type bar and platen, of a movable abutment, the universal bail and a pivoted part, connected with and actuated by the bail and having partially rotatable and detachable connection with the abutment, substantially as specified.

36. The combination with a type bar and a relatively fixed platen, of a movable abutment, universal bail, a pivoted arm connected with the bail and a partially rotatable rod on said arm and mounted for detachable connection with the abutment, substantially as specified.

37. The combination with a key-lever and a type-bar pivotally connected therewith and having independent pivotal connection with a movable part and a sliding abutment for cooperation with said part, of a relatively-fixed platen, means for engaging the abutment and an ink-pad interposed between the platen and abutment, substantially as specified.

38. The combination with a key-lever and a type bar, of a movable abutment and connections between the same and the bar an

interposed bell crank lever pivotally connected with the type bar and with the key lever, the universal bail, a pivoted bar and a connection between said bail and bar substantially as specified.

39. The combination with a key lever and a type bar, of interposed pivotal connections and an independent pivotal connection between the type bar and an independently pivoted arm and a vertically movable abutment for cooperation with said arm substantially as specified.

40. The combination with a key lever and a type bar, of interposed pivotal connections, an independently pivoted arm and an independent pivotal connection between the type bar and independently pivoted arm and the movable abutment for said arm, substantially as specified.

41. The combination with a key lever, a type bar and a pivoted arm having a notch with inclined wall and connected with the type bar, of a movable abutment having a tooth for cooperation with said notch, substantially as specified.

42. The combination with a key lever, a type bar and a movable abutment having an overhanging portion with a depending tooth, of pivotal connections between the type bar and key-lever and an independent pivoted connection with the type bar, including a pivoted arm with a notch for cooperation with said tooth, substantially as specified.

43. The combination with a key lever and a type bar pivotally connected therewith, of a pivoted arm, a movable abutment for cooperation with said arm and a curved link connecting said arm and type bar, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES SPIRO.

Witnesses:
J. FREUDENTHAL,
JULIUS E. LEVY.