

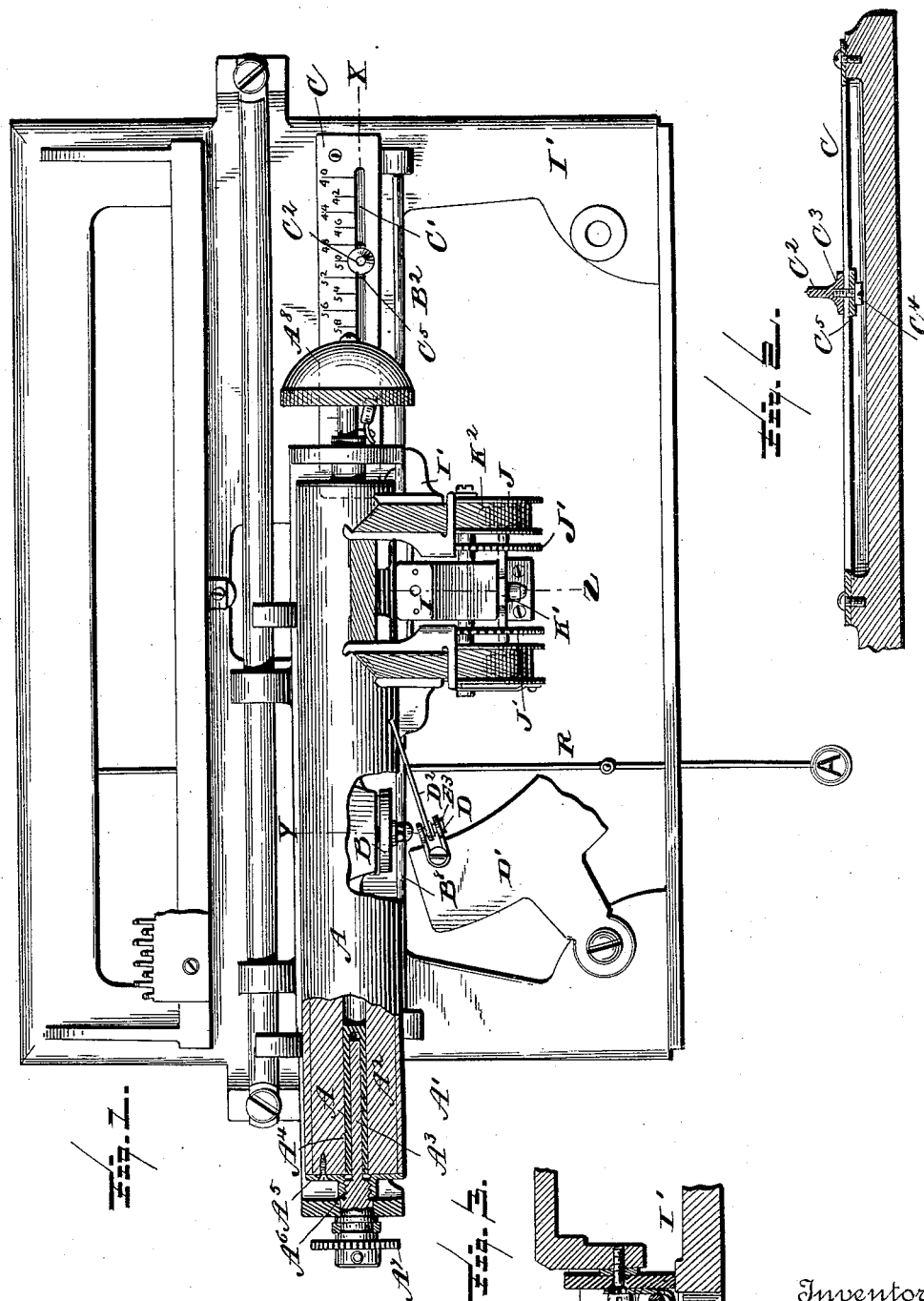
(No Model.)

2 Sheets—Sheet 1.

C. SPIRO.  
TYPE WRITING MACHINE.

No. 454,080.

Patented June 16, 1891.



Witnesses  
L. C. Wells.  
E. Bond.

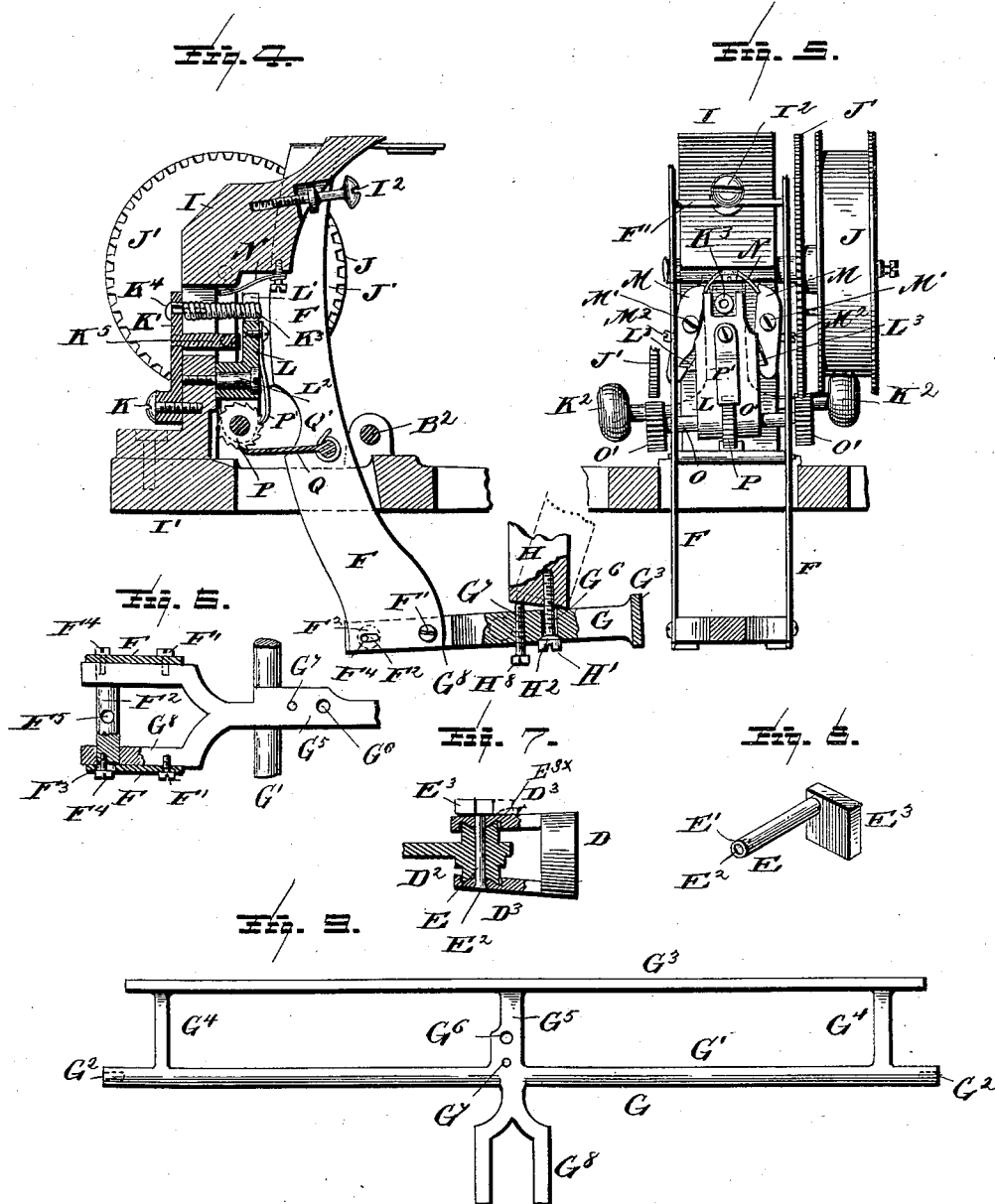
Inventor ;  
*Charles Spiro.*

E B Stocking  
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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. 454,080, dated June 16, 1891.

Application filed September 9, 1890. Serial No. 364,366. (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.

10 This invention has relation to an improvement in type-writing machines; and the objects and advantages of the same will be hereinafter specified, while its novel features are particularly pointed out in the claims.

15 The improvements hereinafter referred to relate to type-writing machines of the character illustrated and more particularly described in its general construction in Patent No. 447,438 granted March 3, 1891, and therefore  
20 a particular description of several parts of the machine as herein shown will be unnecessary.

Referring to the drawings, Figure 1 is a plan, with portions removed and parts in section, of a machine embodying my invention.  
25 Fig. 2 is a longitudinal section on an enlarged scale, taken at X, Fig. 1. Fig. 3 is a vertical section of the carriage-supporting wheel or casting and adjacent parts on the line Y of Fig. 1. Fig. 4 is a vertical section of the spool-standard, taken on the line Z of Fig. 1. Fig.  
30 5 is a rear elevation of the parts shown in Fig. 4, one of the ribbon-spools and its spindle being removed. Fig. 6 is a detailed plan of a portion of the bail. Fig. 7 is a horizontal section through the bearings of the type-bracket. Fig. 8 is a perspective of the adjusting-rivet employed in the type bracket, and Fig. 9 is a plan of the bail.

Like letters refer to like parts in all the figures.

40 A is the platen of the machine, consisting of the coating or shell A', of rubber or other suitable material, and core A<sup>2</sup>, which is bored at each end for the reception of a gudgeon or journal A<sup>3</sup>, with which may be employed, if desired, a sleeve or lining A<sup>4</sup>. In either case the journal or gudgeon A<sup>3</sup> should be fitted truly in the axial line of the platen, the object of the sleeve being to prevent undue wear in the removal of the platen from the machine in the  
50 manner hereinafter described.

A<sup>5</sup> is the usual metallic end piece employed on type-writer platens, and its hub A<sup>6</sup> is screw-threaded for the reception of the similarly-threaded portion of the journal or gudgeon, which latter is extended through the standard or bracket on the carriage in which the platen is journaled, and is provided with the usual line-feed ratchet A<sup>7</sup>. The opposite end of the platen is constructed in like manner, and the projecting journal has mounted thereon the bell A<sup>8</sup>.

Depending from the carriage at any suitable point is the bell-trip, connected in the usual manner with the hammer, which is arranged to strike the bell. The bell A<sup>8</sup> serves as a knob for rotating the platen when introducing paper into the machine.

B represents the carriage caster or roller, in front of which (see Fig. 3) is the depending hook B', which takes under a rod B<sup>2</sup>, extending across the base of the machine. The object of this rod is to prevent the carriage and platen thereon from being lifted upwardly from the base when the paper is being suddenly removed from the platen. This object is attained by reason of the hook B' coming into contact with the rod B<sup>2</sup>. The said hook is preferably arranged a slight distance below the rod, so that no undue friction or resistance to the movement of the carriage across the machine will be occasioned.

C, Figs. 1 and 2, represents a margin-gage. It consists of a plate having a slot C' therein, and within the slot is mounted for movement  
85 a bell-trip-operating pin C<sup>2</sup>. I connect the pin C<sup>2</sup> with the plate C in such a manner that it shall be capable of movement along the plate and shall be held by friction at any desired point. In this instance the pin C<sup>2</sup> has a comparatively broad base C<sup>3</sup> and is perforated for the reception of a screw C<sup>4</sup>, which is passed, first, through a washer C<sup>5</sup>, then through the slot C' of the plate C, and then into the pin C<sup>2</sup>, as clearly shown in Fig. 2. When struck at  
95 its upper end by the bell-trip, the force of the blow has a tendency to tilt the pin C<sup>2</sup>, which is strongly resisted by its frictional contact with the plate C, and therefore the pin is not moved along the slot in said plate; but when force is applied near the base of the pin C<sup>2</sup> by a finger it can be easily moved  
100

along the slot, and in this manner a ready adjustment of the machine to margins of desired width is accomplished.

D' represents the usual type-bar-supporting plate employed in this particular class of machines, and D represents one of the type-bar brackets, which is illustrated on a larger scale in Fig. 7.

D<sup>2</sup> represents the type-bar, which in this instance has concave bearings to fit convex bearings formed in the arms of the bracket D, as clearly shown in Fig. 7. My improvement in this feature of the machine refers more particularly to rivet E, which is employed for securing the type-bar in the bracket. This rivet consists of the body E', the end of which is recessed, as shown at E<sup>2</sup>, and the head E<sup>3</sup> of which is eccentric to the axial line of the body, for a purpose hereinafter specified.

In constructing the brackets D the arms D<sup>3</sup> thereof are usually more or less out of parallelism with each other. This parallelism can, if desired, be intentionally in the construction of the bracket, so that the other faces of the arms D<sup>3</sup> are disposed at another than a right angle to the axial line of the pivot.

In assembling the type-bars to the bracket the rivet is passed through the arms and is upset at its recessed end to fill the opening through which it passes more or less snugly. This opening may be or not, as desired, countersunk, and the rivet may be upset to overlap or loop on the exterior face of the arm. In any event it is only desirable that the rivet should be prevented from withdrawal from the arm at its opposite end. Now it will be noticed by referring to Fig. 7 that when the rivet having an eccentric head is rotated from the position shown in full lines to that shown by dotted lines it acts as a cam by coming into contact with the inclined face of the arm, and thus to draw the two arms snugly more or less against the bearings of the type-bar. In this manner the wear of the bearings is taken up. This forms a valuable feature, in that there is great difficulty in manufacturing screw-threaded devices for binding the arms of the bracket to the bearings of the type-bar and for taking up the wear of the parts by reason of the required smallness of the screws and fineness of its threads. By my improvement these objections are obviated and a strong, serviceable, and adjustable construction is secured at one of the most delicate and readily-worn parts of the machine.

Referring now to Figs. 4 and 5, F represents an oscillating ribbon-carrier having the diagonal turning-guides and connected with the universal bail of the machine. My improvement in this instance has reference to the particular means employed for automatically reversing the winding movement of the ribbon and for accomplishing other results now to be specified.

Referring to Fig. 9, G represents what I have designated as the "universal bail" of the machine. It consists of a single casting having the advantage of obviating the necessity of boring holes and making joints at exact distances and at the required points for the connection with the ordinary rock-shaft of the bridge-pieces and parallel bail-piece proper as these parts have heretofore been constructed. The bail G consists of the pivot-bar G', countersunk at each end (shown by dotted lines G<sup>2</sup>) for the reception of pivot-screws. Parallel to the pivot-bar G' is the bail proper G<sup>3</sup>. At each end is a plain bridge and at the center is a widened bridge G<sup>4</sup>, having perforations G<sup>6</sup> G<sup>7</sup> therein. Extending beyond the pivot-bar G' and opposite the center bridge G<sup>5</sup> is a bracket G<sup>8</sup>, to the opposite edges of which are secured the side pieces of the ribbon-support F. In this instance I disclose a novel construction for the purpose of adjusting the inclination of the support F with relation to the bracket G<sup>8</sup>, the purpose of which is to throw the inking-ribbon at the printing-point closer to or farther from the upper surface of the platen and preventing smearing of the paper by the ribbon. This construction for adjustment involves the pivot-screws F', passing through the plates F into the edge of the bracket G<sup>8</sup>, and the shaft F<sup>2</sup>, having projections of some kind to pass through openings in said plates. The projections in this instance consist of screws F<sup>4</sup>, seated eccentrically in the ends of the shaft F<sup>2</sup>. A hole or any wrench-hold F<sup>5</sup> is formed in the shaft F<sup>2</sup>, so that the same can be readily rotated. In Fig. 4 the eccentric projections F<sup>4</sup> of the shaft F<sup>2</sup> consist of pins. Now it will be readily seen that by rotating the shaft F<sup>2</sup> the plates F are oscillated on the pivots F', whereby the ribbon-carrying ends of the plates are thrown forward or backward with relation to the printing-point of the machine.

H represents the lower end of the standard which carries the feed-pawls that co-operate with the usual rack-bar arranged longitudinally along the under side of the carriage. My improvement in this regard has reference to means for adjusting said standard in order to regulate the time of escapement of the pawls from the feed-rack on the carriage, and it consists in providing the binding-screw H', having, preferably, a ball or convex face H<sup>2</sup> on the side of its head toward its threaded body, which is fitted to a concave or countersunk bearing at the aperture G<sup>6</sup> in the central bridge G<sup>5</sup> of the bail. In the aperture G<sup>7</sup> there is threaded an adjusting-screw H<sup>8</sup>, which abuts against the lower end of the standard II, which lower end is for convenience and for illustration shown as beveled with relation to its sides, which are or may be parallel. By loosening slightly the screw H' and loosening or tightening the adjusting-screw H<sup>8</sup> the upper end of the standard carrying the pawls will be tilted in a forward or backward

direction, as desired, whereby the escapement of the pawls from the rack-bar may be regulated with relation to the oscillation of the standard and of the bail upon which it is mounted.

I represents the spool and locking-plate-supporting standard, which is secured to the base I' of the machine about opposite the printing-point. Near the top of the standard is a double-headed screw I<sup>2</sup>, and between the heads of said screw a cross-bar F' of the ribbon-support F oscillates. The distance between the heads of the screw I<sup>2</sup> is sufficient to permit such oscillation of the ribbon-support or carrier as will expose a character when impressed on the paper. By introducing a screw-driver between the ribbon-support and the platen the said screw may be run out or in, so as to cause different longitudinal portions of the ribbon to be brought to the printing-point, it being understood that only a portion of the width of the ribbon is covered in making an impression. Thus the entire width of the ribbon may be subjected to use.

J represents the ribbon-spool, and J' its ratchet, with which the spool is operatively connected. On the front of the standard I is the pivot K of an oscillating plate K', which is substantially T-shaped, and on each arm of the T is supported an anti-friction roller K<sup>2</sup>. These rollers are arranged to run opposite that portion of the spool which carries the ribbon, so that when the spool is filled the roller and arm beneath that spool are depressed, so as to tilt the plate K' on its pivot. Projecting from the upper end of the plate K' is a spring K<sup>3</sup>, which in this instance is in the form of a close coil to give it resiliency in all lateral directions, which spring is secured by a screw K<sup>4</sup> to the plate K'. It may be secured in any desired manner. This spring projects into a slot L', formed at the upper end of a plate L, mounted on a pivot L<sup>2</sup>, projecting from the back of the standard I. The plate L has formed thereon two lugs L<sup>3</sup>, which are shown projecting over each side of the plate in Fig. 5.

MM represent two locking-hooks, which are pivoted to the standard and in a plane passing back of the plate L by means of screws M'. The upper ends of the locking-hooks are held apart by means of a two-arm spring N. At the lower end of the plate L there is journaled a transverse shaft O, carrying at each end a pinion O', which is adapted to mesh with one of the spool-gears of ratchets J'. Centrally on the shaft is a ratchet P, and on the face of the plate L is a detent P'. The ribbon-support F carries a pawl Q, which by means of a spring Q' is held upwardly against the ratchet P.

Projecting forwardly from the plate K' is a stud K<sup>5</sup>, and in each of the locking-hooks M is an adjusting-screw M<sup>2</sup>. One of these screws is shown by dotted lines back of the lug K<sup>5</sup> in Fig. 4. The object of the screws M<sup>2</sup> is to

provide an adjustable point of contact of the lug K<sup>5</sup> with each of the locking-hooks, so as to adjustably determine the extent of the escapement of each hook from the lugs L<sup>3</sup> of the plate L, as hereinafter described.

The key-levers R of the machine are arranged to bear on the bail-plate proper G<sup>3</sup> of the bail, so that when depressed the bail G is oscillated on its pivots, and the ribbon-support F is caused to approach the printing-point, and when the key is released the ribbon-support recedes from over the printing-point. In this movement of the ribbon-support the pawl Q actuates the ratchet P, which rotates the shaft O and its pinion O', and the latter gives movement to the gear or ratchet J' of that spool which is winding up the ribbon. When that spool becomes filled with ribbon, the roller K<sup>2</sup> is depressed, so as to tilt the plate K' and cause the spring K<sup>3</sup> to bear yieldingly against the wall of the slot L' of the plate L, which is toward the full spool.

The pressure of the springs K<sup>3</sup> has a tendency to tilt the plate L to the right in Fig. 5. Such tilting, however, is prevented by the locking-hook M until in the displacement of the plate K' and its lug K<sup>5</sup>, the latter makes contact with the adjusting-screw M<sup>2</sup> in said locking-hook when said hook is disengaged from the lug L<sup>3</sup> of the plate L, and said plate is then, by reason of the power stored in the spring K<sup>3</sup>, quickly tilted, carrying with it the pinion O' from the winding spool-gear or ratchet and the opposite pinion O' toward an intermesh with the gear or ratchet J' of the opposite spool. In this manner the winding of the ribbon is automatically changed to be performed by the alternate spools when they become filled.

I do not confine myself to the exact details of construction herein shown and described, as I may alter the same in any manner and to any extent within the skill of persons conversant in the construction of type-writing machines, including simple reversals of the devices herein shown and described with relation to each other. For example, in the rivet employed for securing and taking up the wear of the type-bar bearings the inclination may exist in the end face of the rivet-head instead of upon the outer surface of the bracket-arms.

It is apparent that the arms of the bracket need not be out of parallelism if a projection, inclined or otherwise, is formed on the outer surface of the arm, as shown at E<sup>2x</sup>, Fig. 7, nor is it necessary in such modification and similar ones that the head of the rivet should be eccentric. So in other respects such features of construction may be reversed and still be apprehended by my invention.

What I claim is—

1. A platen provided with a screw-threaded end casting and with a journal screw-threaded therein and extended axially and non-rotatably into the platen, substantially as specified.
2. The combination, with the carriage, of a

platen having removable journals adapted to fit the bearings in the carriage-standards and to be removably and non-rotatably connected with the platen, substantially as specified.

3. The combination, with the platen, of the sleeve or lining, the screw-threaded end casting, and the journal having a bearing outside of the end casting threaded to the casting fitted to the lining and projecting for the mounting of devices thereon outside of its bearings, substantially as specified.

4. A slotted gage-plate and a broad-based and tapered-bodied pin frictionally held thereon, substantially as specified.

5. A slotted gage-plate and a broad-based and tapered-bodied pin frictionally held upon the plate by means of a screw passing through the slot and into the pin, substantially as specified.

6. The combination, with a type-bar and a bracket, of a rivet having an eccentric head movable for adjustment, as set forth.

7. The combination, with a type-bar and a bracket, of a rivet connecting the same and constructed to tighten its draft by its rotation, as set forth.

8. The combination, with a type-bar and its bracket, of a rotatable rivet with a projection between the bracket and the under face of the head of the rivet, substantially as specified.

9. A bail comprising a pivot-bar, a bail proper, and connecting-bridges, the central bridge being widened to form a point of attachment for a dog-standard, all formed in one piece, substantially as specified.

10. The combination, with a bail and a ribbon-support, of an eccentric-rod for adjusting the support on the bail, substantially as specified.

11. The combination, with the ribbon-support, of a bracket to which the support is pivoted and of an eccentric-rod extending from side to side of the support and having a bearing in the bracket, substantially as specified.

12. The combination, with a bail and with a dog-standard, of an attaching-screw and an adjusting-screw connecting the bail and standard, substantially as specified.

13. The combination, with a bail and a dog-standard, of an adjusting-screw connecting the bail and standard, substantially as specified.

14. The combination, with a movable ribbon-support, of a screw having two flanges or heads, one of each arranged at opposite sides in the path of the support, substantially as specified.

15. The combination, with the ribbon-support and a platen, of a ribbon-support-adjusting screw arranged for access between the support and platen, substantially as specified.

16. The combination, in the ribbon-support having a cross-bar and a double-headed screw arranged with a head upon each side of the cross-bar, of a pawl mounted on the support, and a ratchet mounted on a shaft carrying pinions and adapted to oscillate, whereby the pinions may be thrown into and out of mesh with suitable gearing for operating the spools, substantially as specified.

17. The combination, with the ribbon-support and with a pawl mounted thereon, of an oscillating plate carrying a shaft provided with a ratchet and with pinions, and ribbon-spools provided with gears, and a device operatively connected to tilt the pinion and ratchet-carrying plate by pressure exerted by the ribbon, substantially as specified.

18. The combination, with the ribbon-support, of a tilting plate carrying a shaft provided with pinions and with a ratchet, and a secondary plate operated by a ribbon, and connecting mechanism between the two tilting plates, substantially as specified.

19. The combination, with the ribbon-support, of a tilting plate carrying a shaft provided with pinions and with a ratchet, and a secondary tilting plate operated by the ribbon, and resilient connecting mechanism, substantially as specified.

20. The combination, with the ribbon-support, of a plate carrying a shaft provided with pinions and with a ratchet, and a secondary tilting plate operated by the ribbon, and resilient connecting mechanism consisting of a closed coiled spring, substantially as specified.

21. The combination, with the ribbon-support having a pawl, of an oscillating plate carrying ratchet and pinion devices and having lugs, locking-hooks, and means for releasing the same, substantially as specified.

22. The combination, with a ribbon-support and a tilting plate carrying pinion and ratchet mechanism and lugs, of locking-hooks and mechanism for tilting the plate and releasing the hooks, substantially as specified.

23. The combination, with an oscillating plate carrying spool-operating mechanism, of a secondary tilting plate carrying devices projected into the path of the ribbon, substantially as specified.

24. The combination, with a type-bar and a type-bar bracket having an inclined arm, of a rivet having an eccentric head, substantially as specified.

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

CHARLES SPIRO.

Witnesses:

J. FREUDENTHAL,  
C. W. STUBBINGS.