

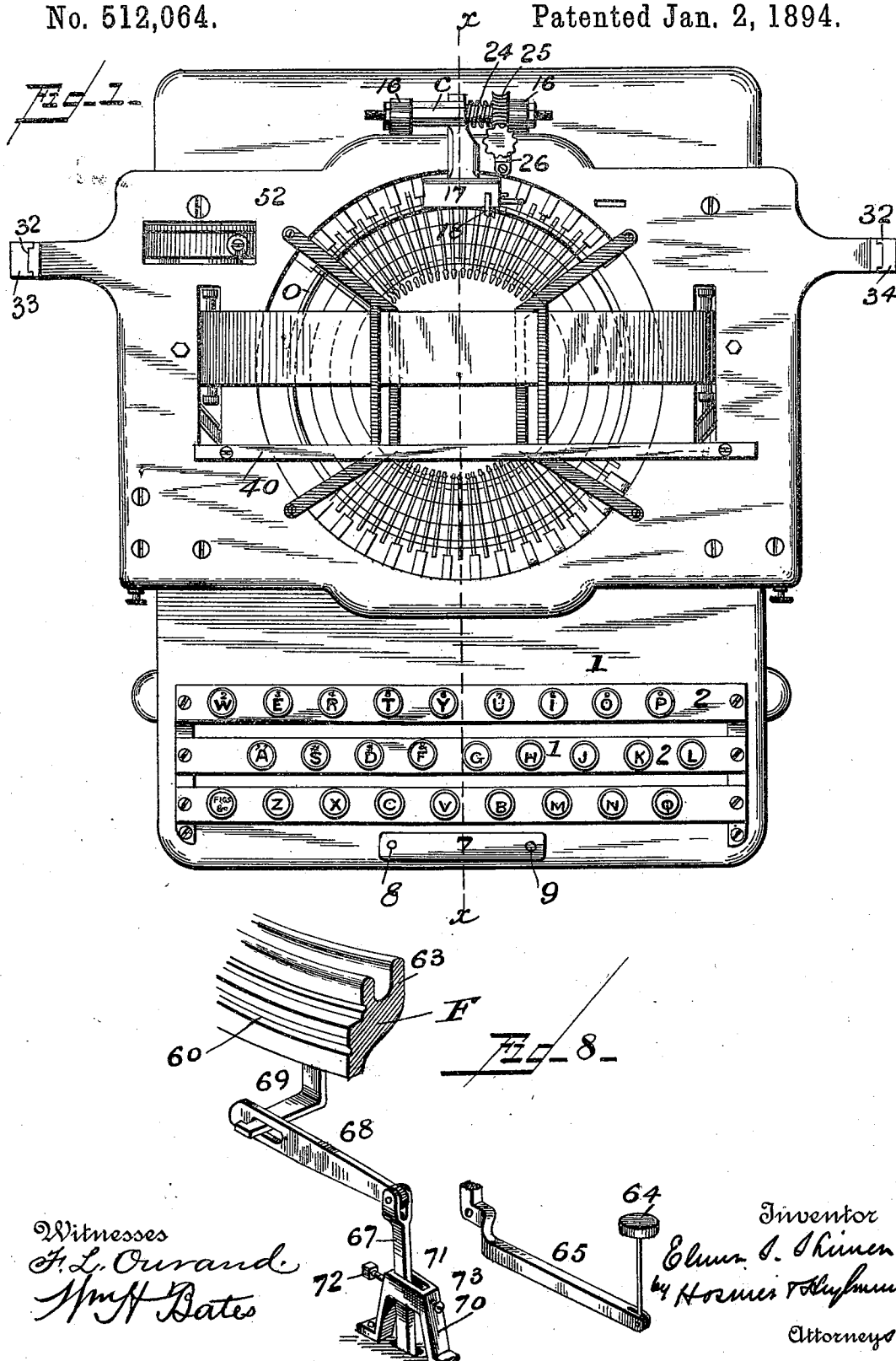
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4 Sheets—Sheet 1.

E. S. SHIMER.
TYPE WRITING MACHINE.

No. 512,064.

Patented Jan. 2, 1894.



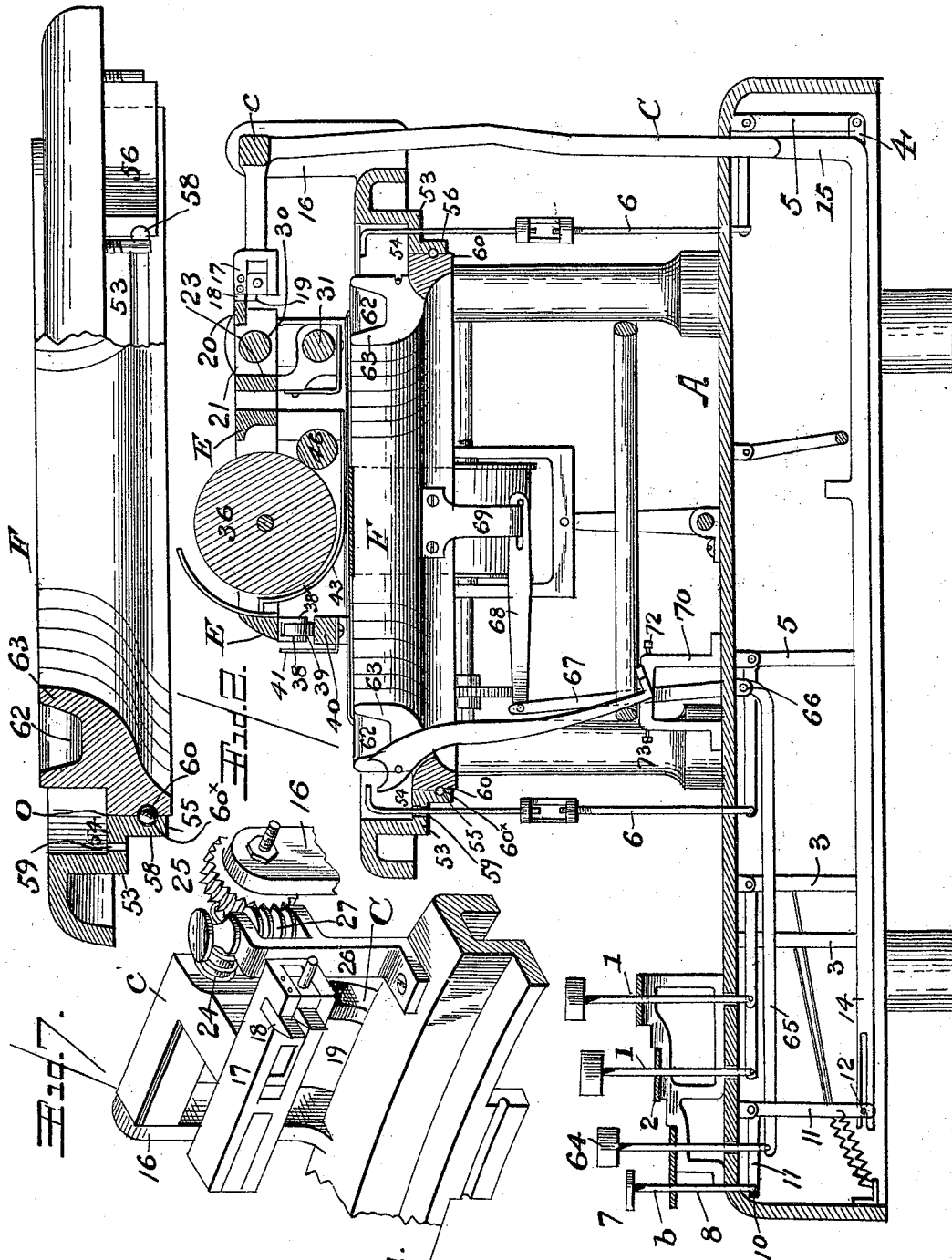
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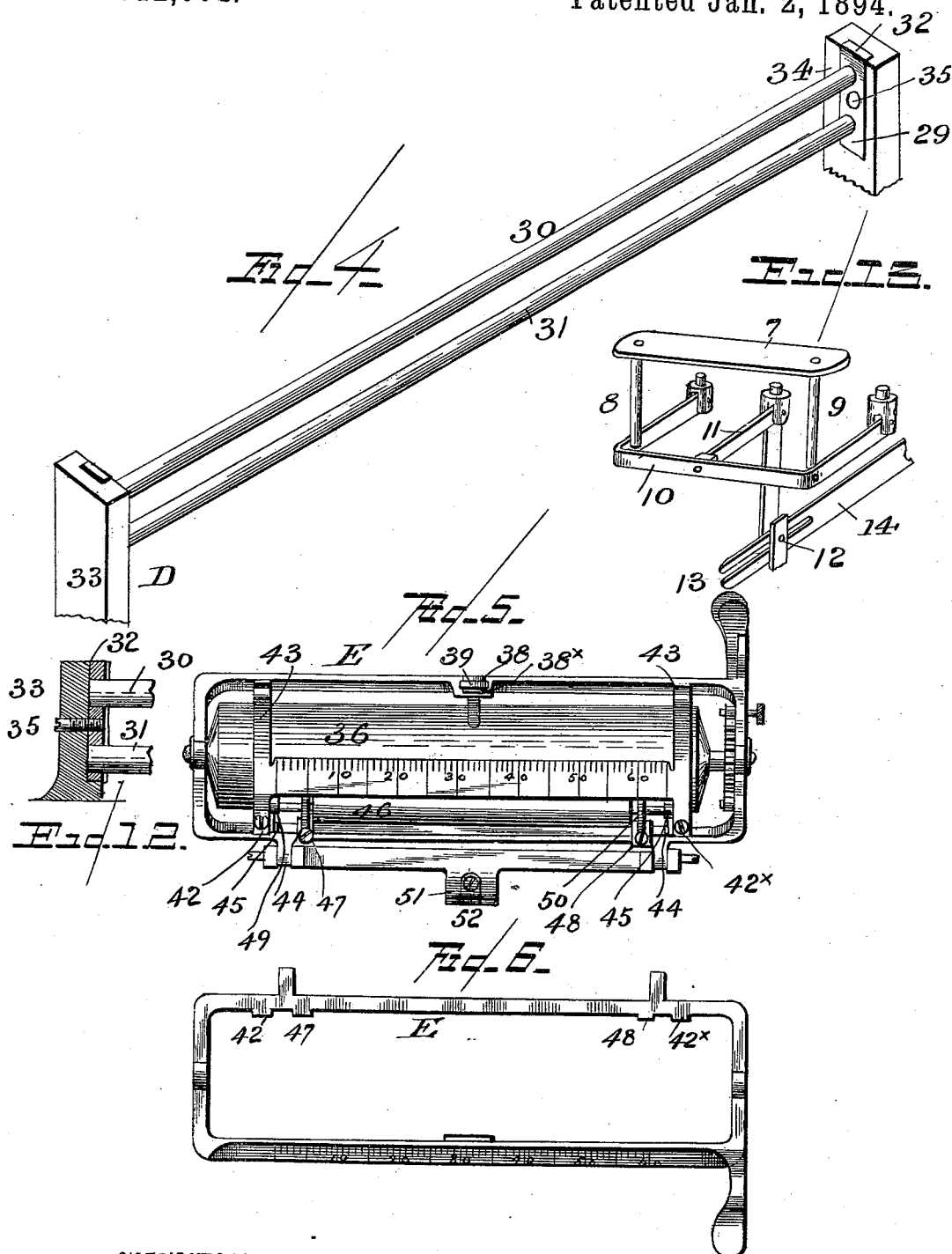
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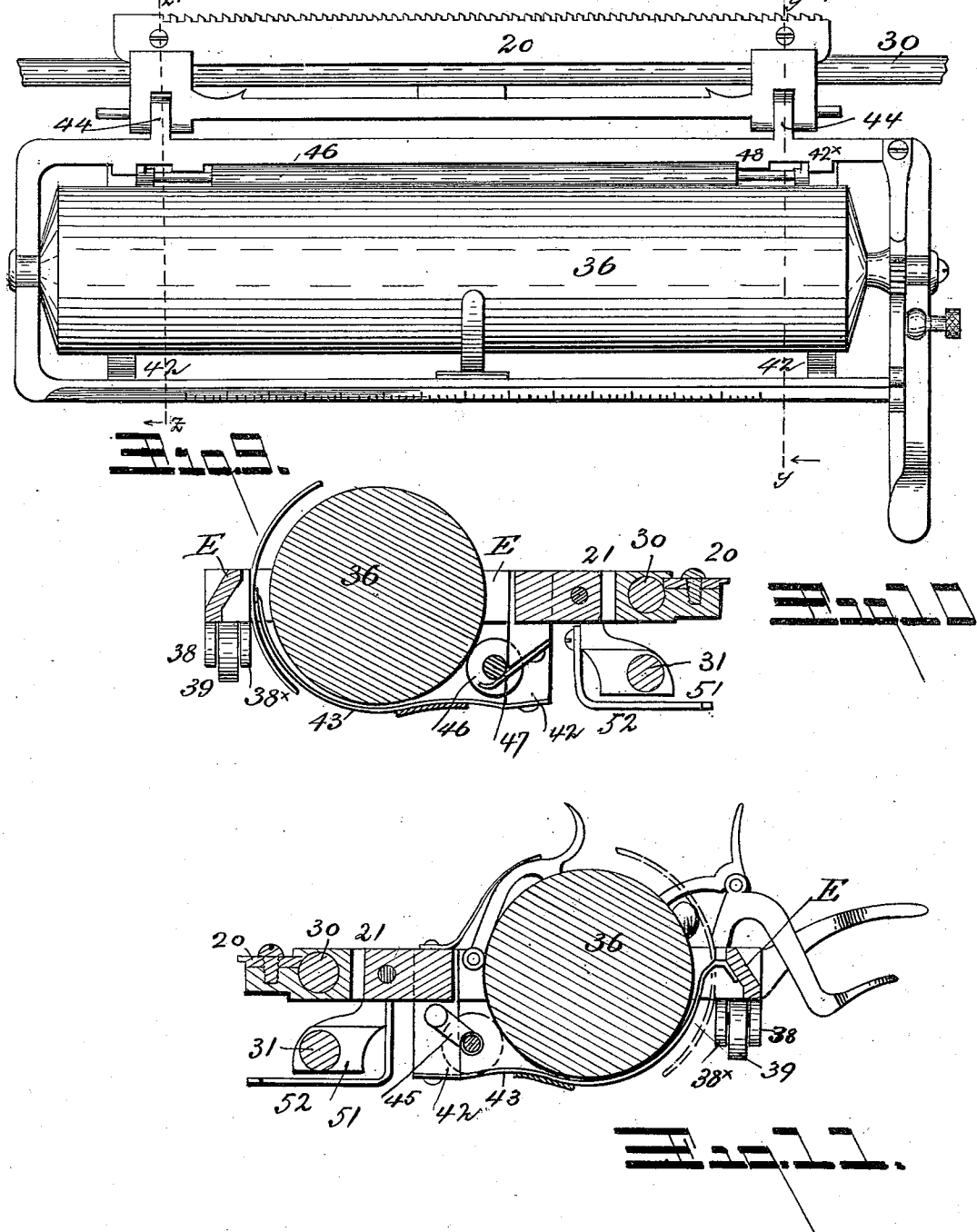
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UNITED STATES PATENT OFFICE.

ELMER S. SHIMER, OF MILTON, PENNSYLVANIA.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 512,064, dated January 2, 1894.

Application filed April 18, 1893. Serial No. 470,888. (No model.)

To all whom it may concern:

Be it known that I, ELMER S. SHIMER, a citizen of the United States of America, residing in Milton, in the county of Northumberland and State of Pennsylvania, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to type-writing machines, and the object is to simplify and perfect the mechanism adapted to operate a machine of the character and type shown and described in my former Letters Patent No. 462,019, dated October 27, 1891.

I have fully and clearly illustrated my present invention in the accompanying drawings, wherein—

Figure 1 is a plan view of the machine; the roller platen being removed. Fig. 2, is a longitudinal section on the line $x-x$ of Fig. 1. Fig. 3, is a detail of the spacing-mechanism. Fig. 4, is a perspective of the carriage supporting-bars. Fig. 5, is a bottom view of the roller platen and carriage. Fig. 6, is a detail of the carriage-frame. Fig. 7 is a section through the supporting-flange of the top plate and the type-bar ring, showing the bearing-ball between them. Fig. 8, is a view showing the shifting-lever, and the means to adjust and limit the movements. Fig. 9 is a plan view of the roller platen and carriage, showing the spacing-rack. Fig. 10 is a transverse section on line $y-y$ of Fig. 9. Fig. 11 is a transverse section on line $z-z$ of Fig. 9. Fig. 12 is a section through one of the posts of the carriage bars. Fig. 13 is a detail perspective of the spacing-mechanism located at the front of the machine.

Referring to the drawings, A designates the frame of the machine, which is suitably perforated to take the stems of the finger-pieces 1, which are guided through bars 2, substantially as indicated in the drawings; these finger-pieces are jointed below the frame or base to bell-crank levers 3, having rods 4, connected at their farther ends to bell-crank levers 5, fulcrumed under the bed-plate jointed to the lower ends of the pawl-stems 6, which engage the heels of the type-bars, substantially as shown, and substantially as shown and described in my patent heretofore cited.

B designates the spacing-lever, consisting of a finger-plate 7 having the bars 8, 9, passing through the plate of the bed-piece of the machine and fastened at their lower ends to a bar 10, from the middle of which projects one arm of a bell-crank lever 11, fulcrumed under the bed-plate and having the depending arm pivoted with a pin 12, engaging in a slot 13, in the rod 14, having a rigid vertical post 15, at its farther end which is jointed to the stem of the spacing-lever C, which is formed with a cross-bar c at its upper end, fulcrumed in the posts or brackets 16, rising from the top plate of the machine. From the cross-bar c projects the spacing-arm, or bracket 17, which carries the spacing-pawls 18, 19, the construction and operation of which, are substantially identical with the pawl and ratchet mechanism of my former cited patent. The spacing pawls engage the ratchet or spacing bar 20, mounted on the sleeves 21, 22, of the sliding-bar 23 of the carriage. My present invention has relation to improved means for regulating and adjusting the tension of the spacing and key levers, which is effected by the following described means. On the cross-bar c of the spacing-lever is mounted a spring 24, one end of which is lodged on the arm of the cross-bar and the other end fixed in a worm-gear 25, loosely journaled in the arm of the cross-bar and cored out to receive the spring. On the top plate of the machine is mounted a standard 26, having arms projected therefrom, in which is journaled a vertically disposed worm 27, which engages the worm-gear 25, on the cross-bar of the spacing-lever. By turning the worm 27, the gear 25, is rotated which increases or decreases the torsional force of the spring 24, and consequently increases or decreases the power requisite to operate the spacing-lever and the key-levers.

A further element of my invention consists in the improved frame D for the carriage bars. This frame consists of end-pieces 28, 29, and the parallel bars 30, 31. The end pieces 28, 29, are provided with upper and lower apertures those in one piece registering accurately with those in the other, and are detachably fitted on the bars, as shown. The end pieces fit in ways 32, in the inner faces of the end posts 33, 34 rising from the top

plate of the machine; and to hold the pieces in the ways screws 35, are let through the posts and take in threaded holes in the pieces. By this arrangement and construction the frame may be readily removed and inserted, and secured, and the exact alignment of the upper and lower bars be attained, and maintained, which desired and essential relation is not always had under the construction wherein these bars are mounted in posts having openings to take them. In my improved construction, the frame can be readily removed, and then one or both bars removed from the brackets connecting the carriage to the bars. It is readily perceived that the end-pieces 28, 29, may be made to fit in dovetail grooves in the posts.

My invention also has for its object to improve the construction of the carriage and its associated elements. This consists in a rectangular cast-frame E, made in a single piece in which is journaled the roller-platen 36, on the front bar of which is a graduated scale 37, running from left to right and indicating the number of characters printed in a single line across a page. In the middle of and under the front bar, are two lugs 38, 38^x, integral with the bar, and between these lugs is journaled a roller 39, which runs on the bar 40, mounted over the top plate of the machine, as shown, and from the middle of this bar rises a pointer 41, the end of which indicates the position of the carriage on its progress across the machine by its relation to the carriage-scale. On the rear bar of the carriage-frame are formed two depending lugs 42, 42^x, to which are fastened the spring end pieces 43, of the paper scale 44, having graduations marked thereon running from left to right. The spring end pieces 43 extend under the roller being curved to align therewith and have their ends bent in angular shape and looped against the inner face of the front bar of the carriage. In the lugs 42, 42^x, are pivot-pins 44, on which are hung the hangers 45, in the free ends of which is journaled the feed roller 46. To press the feed roller against the roller platen I form depending lugs 47, 48, on the rear bar of the carriage, to the under or end face of which are secured plate-springs 49, 50, which bear up on the extended journals or shaft of the feed roller, and maintain it in yielding relation and contact with the paper when inserted between the two rollers. By this construction of the carriage that rigidity is attained which is essential to correct alignment, and the feed roller is held in operative position by reliable and simple means. The arrangement of the top and bottom scales with graduations running on both from left to right avoids reversal of these scales, and through the instrumentality of the stationary pointer on the bar on the top plate of the machine, the agreement between any point on the paper-scale is readily found on the carriage-scale, since the scales agree in all respects. The carriage is hinged at the rear to

the sliding-bar, and moves therewith, and it may be turned up on the hinges. On the under part of the sliding bar is formed a sleeve 51, through which the lower bar of the carriage-bar frame is passed to slide thereon, and to the sleeve is fastened the strap 52 which leads to the spring motor wheel, and by which the carriage is pulled across the top plate.

My next improvement relates to the means for supporting the type-bar ring. In my Patent No. 462,019, this element is supported on a ring fitted in the top plate of the machine, having supporting pieces with their inner ends projected beyond the inner face of the ring, with the ends engaging in an annular groove in the perimeter of the type-bar ring. In my present invention the top plate is cast with a central circular opening O, surrounded by a depending flange 53, having an inwardly directed horizontal flange 54, from which, at radial points thereon, depend flanges 55, 56, and 57 in the inner face of which is formed a half round groove 58. In the flange 54 are formed apertures 59, in which the stems of the pawls are arranged, and by which they are guided in their reciprocations. F designates the type-bar ring, which consists of a metal ring fitted to the opening in the top plate, and formed with an annular half round groove 60, registering with the groove 58 and the flanges 55, 56, 57. In the round opening thus formed by these grooves are disposed anti-friction balls 60^x, on which the type-ring is supported, and which serve as the bearings therefor, when shifted to bring different type into action. To prevent the bearing balls from escaping from the seat between the flange and the ring, the end of the opening may be closed by any proper means. I have shown for this purpose small stud-screws let into the top plate at the end of the flanges. By this construction the friction between the parts is reduced to a minimum, and the parts as well supported as in the instance where rigid lugs or supporting pieces sustain the type-ring. The type-ring is formed with the desired number of vertically arranged and radially directed grooves 61, within which the type-bars are pivotally supported, as shown, by a wire passed through holes in the heels of the type bars. The metal of the type ring extends inward, as shown, and in the upper face thereof is a deep groove 62, the metal at the inner portion standing substantially vertical, as seen at 63. This construction makes the ring a light one, and the standing inner portions 63, serve as guides for the type-bars to preserve and insure the direction of each bar and the alignment of the whole number.

My next improvement relates to the mechanism for shifting the type-bar ring. The lever by which this is accomplished is of the same construction as that used in my patent, heretofore cited. I have found by experience that this lever not being controlled in its movements had a tendency to shift the type-bar ring either not far enough, or too far,

and thus mar the beauty of the printing, and to control and adjust the action of the lever in these respects, I have devised the following described device: 64 designates the 5 finger-bar of the shifting lever, 65, to which it is jointed. The lever is fulcrumed in a bracket 66, on the bottom plate, and has a vertical arm 67 projected through an opening in the bottom plate, the upper end of the arm 10 67 being jointed to a connecting bar 68, the inner end of which is in turn connected to a rigid depending arm 69, on the shiftable type-bar ring. On the face of the bottom plate is mounted and secured a stand 70, having in 15 its top an elongated slot 71, through which the vertical arm of the lever 67 passes, as shown. From opposite sides of the stand 70, are let in adjusting screws 72, 73, and by moving these screws inward or outward the stroke 20 of the lever is correspondingly limited and regulated. It will be perceived by thus limiting and adjusting or regulating the stroke of the lever the distance to which it moves the shifting type-bar ring is also regulated, and 25 the return movement also limited and controlled.

The operation of the respective parts to which my improvements relate, has been stated in connection with the description.

30 The ribbon mechanism may be of any approved character. It does not form a part of the present invention, and may consist of the usual ribbon spool having gearing-connections with the spring motor of the machine.

35 What I claim is—

1. The combination with spacing-lever formed with a cross-arm, pivotally supported on the top-plate, of a torsional-spring on one of the limbs of the cross-bar, a worm-gear 40 journaled on the said arm and having one end of the torsional spring fixed thereto, and a worm mounted in bearings on the top plate to engage the worm gear, whereby the force of the spring is adjusted and the tension of 45 the levers regulated.

2. The combination with the spacing-lever, formed with a cross-arm, of a lever and spac-

ing tension-device, composed of a torsional-spring arranged on a limb of the cross-arm, a worm-gear jointed on the same arm and cored 50 out centrally to take and hold one end of the spring, a stand fixed to the top plate of the machine, and a worm journaled in the stand to engage and turn the said gear, substantially as and for the purpose specified. 55

3. The rear supporting-bar frame for the carriage, composed of detachable end pieces provided with apertures to take and hold the upper and lower bars parallel to each other as described. 60

4. The combination with the top-plate of the machine formed with vertical end posts having vertical ways in their inner faces, the end pieces secured in said ways, and upper and lower parallel bars in the end pieces as 65 described.

5. The combination of the top plate having radially arranged flanges bordering the central opening therein, formed with half round grooves in their inner faces, a type-bar ring 70 fitted to set against the said flanges, and formed with a half round groove in its perimeter, and anti-friction balls in the grooves between the flanges and the type-bar ring.

6. The combination with the shifting lever, 75 and the type bar ring, of a stand on the machine formed with a slot through which an arm of the lever projects, and adjusting means in the stand to limit and regulate the movement of the lever. 80

7. The combination with the shifting lever of a stand on the bed of the machine formed with an elongated slot in its upper end, and having the lever passed therethrough, and oppositely arranged adjusting screws let through 85 the stand whereby the stroke of the lever may be adjusted and limited in both directions.

In witness whereof I have hereto set my hand in the presence of two attesting witnesses.

ELMER S. SHIMER.

Attest:

A. G. HEYLMUN,
C. L. TREVITT.