No. 854,187. PATENTED MAY 21, 1907.

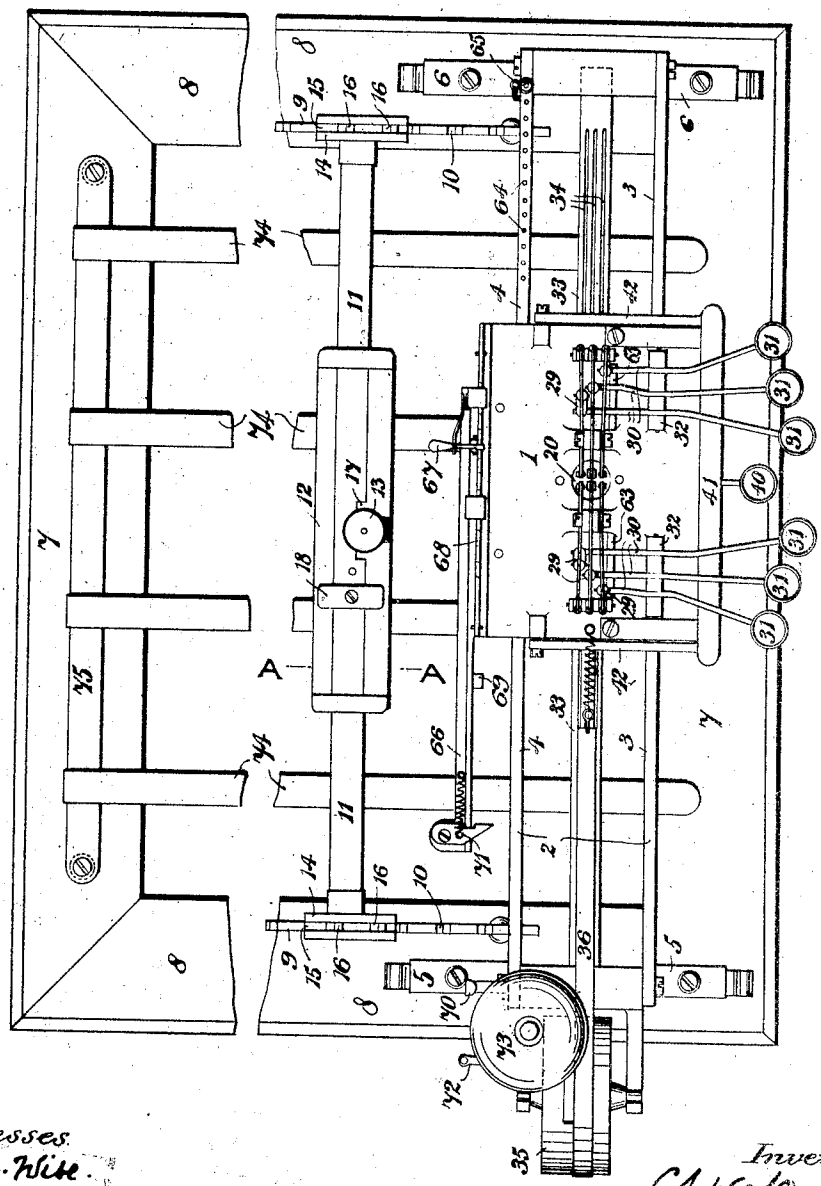
C. S. WATSON.

TYPE WRITER.

APPLICATION FILED NOV. 17, 1905.

5 SHEETS—SHEET 1.

Fig. 1.



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E. L. Brown.

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by Wright Brown & Quinby
Attorneys

No. 854,187. PATENTED MAY 21, 1907.

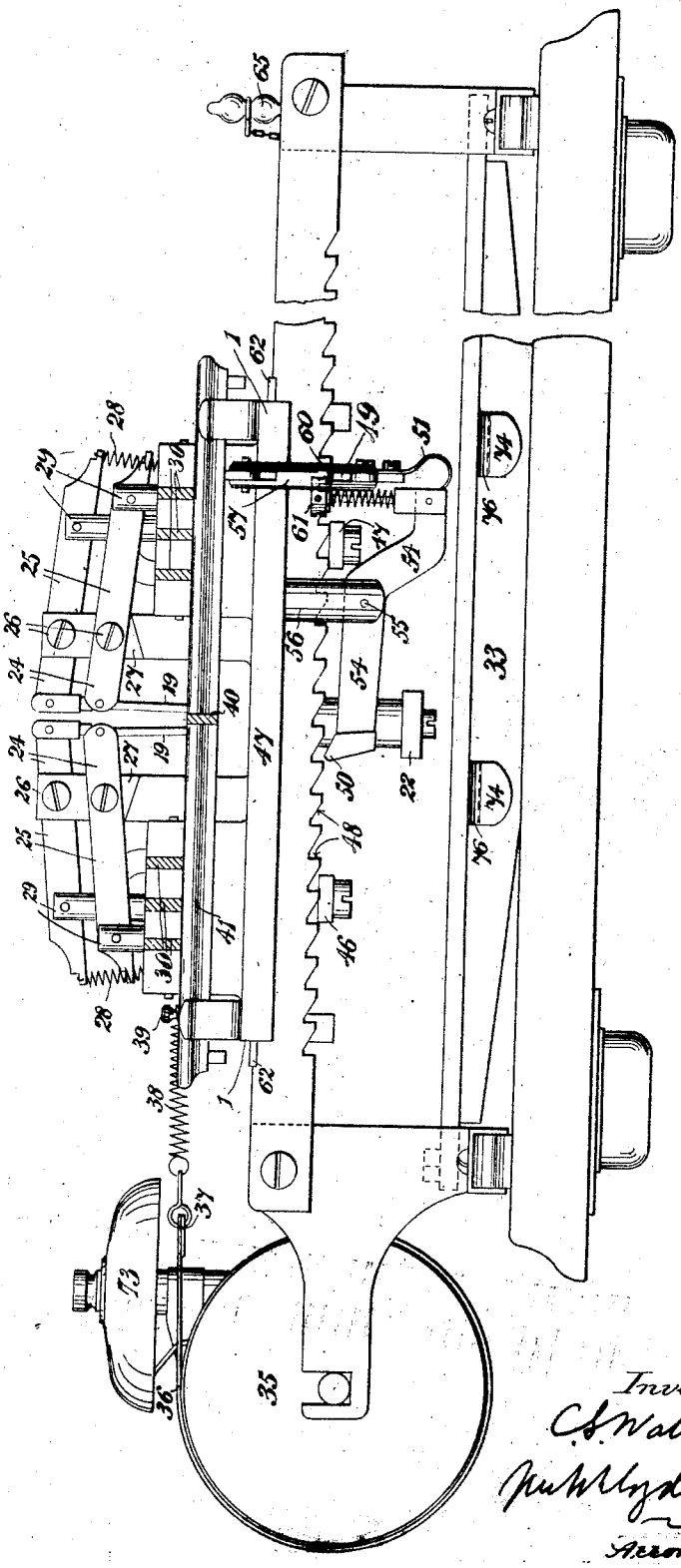
C. S. WATSON.

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APPLICATION FILED NOV. 17, 1905.

5 SHEETS—SHEET 2.

Fig. 2.



Witnesses.
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No. 854,187. PATENTED MAY 21, 1907.

C. S. WATSON.

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5 SHEETS—SHEET 3.

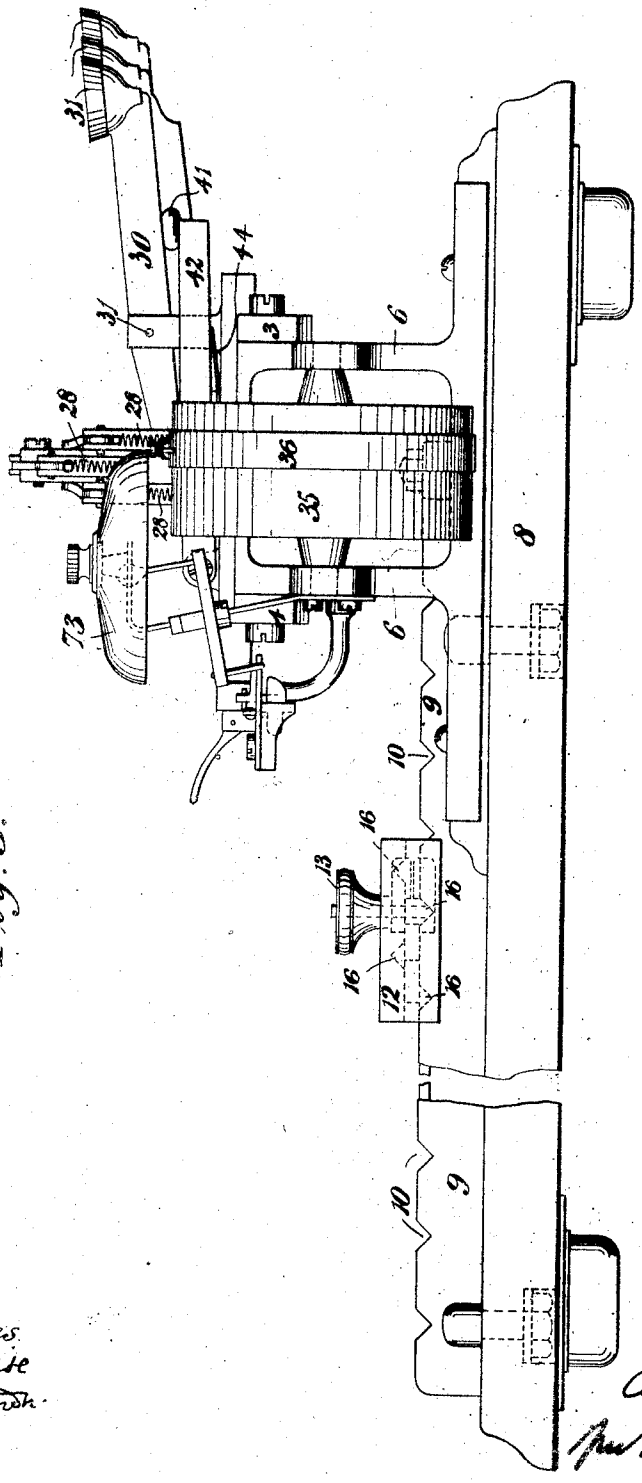


Fig. 3.

Witnesses
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No. 854,187. PATENTED MAY 21, 1907.

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APPLICATION FILED NOV. 17, 1905.

5 SHEETS—SHEET 4.

Fig. 6.

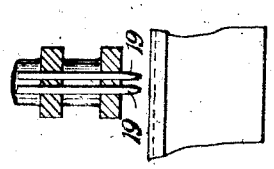
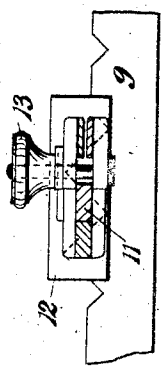
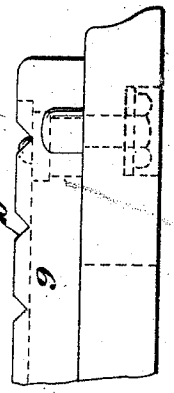


Fig. 5.





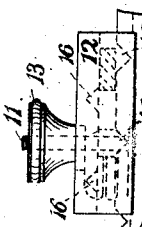
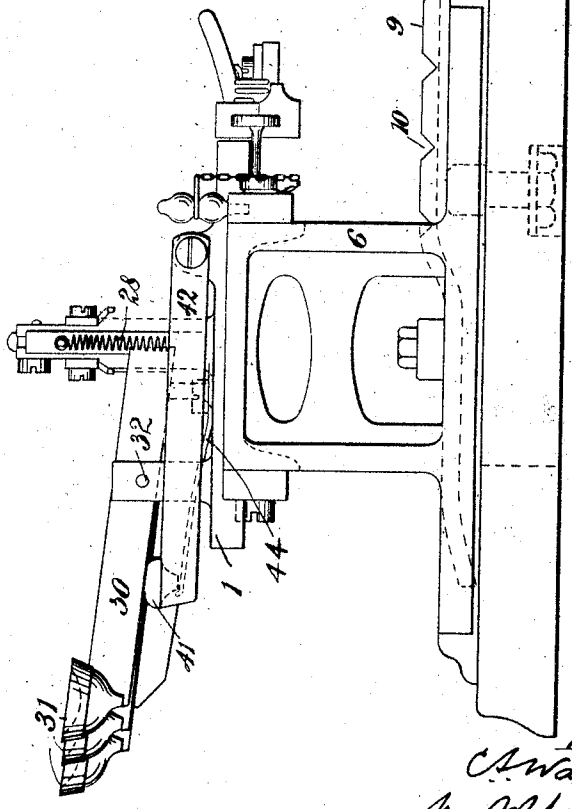


Fig. 4.



Witnesses
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No. 854,187. PATENTED MAY 21, 1907.

C. S. WATSON.

TYPE WRITER.

APPLICATION FILED NOV. 17, 1905.

5 SHEETS—SHEET 5.

Fig. 8.

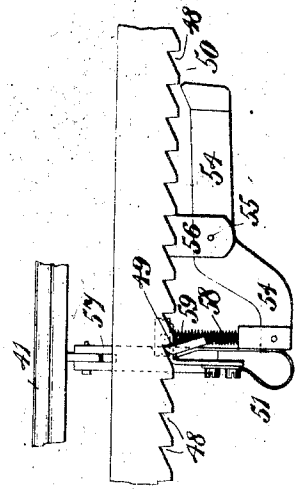


Fig. 9.

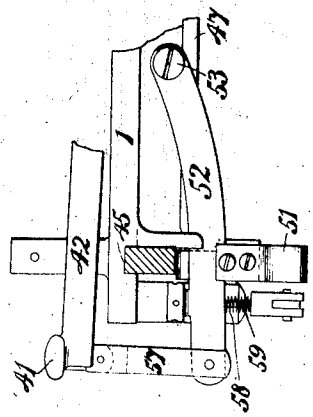
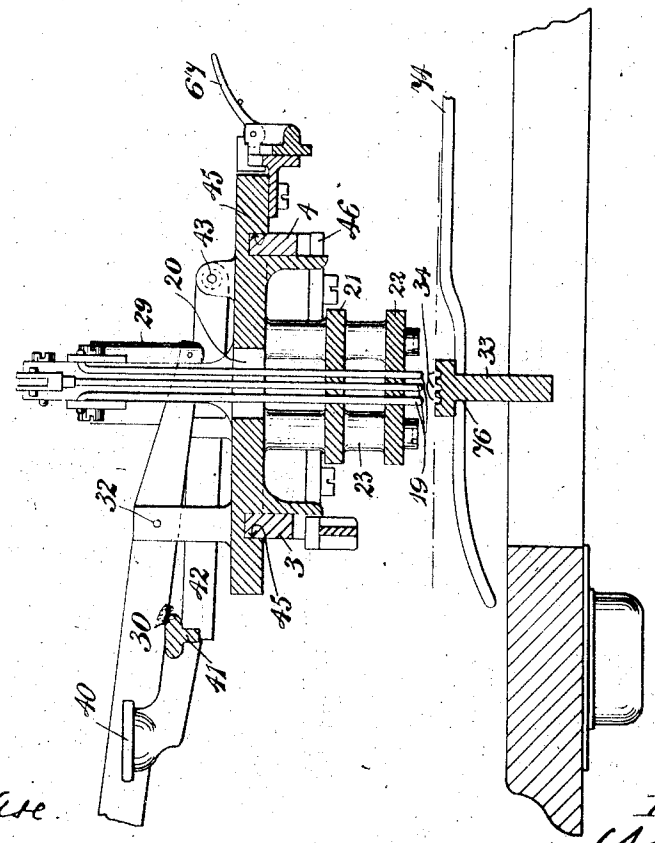


Fig. 7.



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES SCOTT WATSON, OF NEWCASTLE-UPON-TYNE, ENGLAND.

TYPE-WRITER.

No. 854,187. Specification of Letters Patent. Patented May 21, 1907.

Application filed November 17, 1905. Serial No. 287,799.

To all whom it may concern:

Be it known that I, CHARLES SCOTT WATSON, a subject of the King of Great Britain and Ireland, residing at Newcastle-upon-Tyne, in the county of Northumberland, England, have invented Improvements in Type-Writers, of which the following is a specification.

This invention relates to improvements in type-writers of the kind wherein, by means of key-actuated punches, there are produced, upon a sheet of paper or like suitable material, raised or embossed impressions forming characters that are legible by the blind.

In a typewriter according to this invention there is secured upon a base preferably of rectangular form a pair of parallel bars that are furnished with indentations that correspond with the spacing of successive lines of typed matter; a paper-carrying bar that is arranged transversely to said rails, that can be moved along the same, and that, for the purpose of regulating the spacing of successive lines, is furnished with projections that are adapted to engage with the indentations in the rails, a bridge extending transversely in relation to the operator and to said parallel bars, a carriage mounted on said bridge and adapted to traverse the same, a spring-drum arranged in proximity to the bridge and furnished with a peripheral tape or band whose extremity is attached to the carriage, upon said carriage punches, keys and mechanism for actuating the same, and means adapted, in conjunction with the spring barrel, to cause the carriage to traverse the bridge, and a platen furnished with grooves or recesses to receive the points of the punches when the same are actuated by the keys.

The accompanying drawings illustrate typewriting apparatus in accordance with this invention; wherein

Figure 1 is a plan of the apparatus viewed from above; Fig. 2 is a front elevation, the keys being removed; Figs. 3 and 4 are side elevations viewed respectively from the left and right; Fig. 5 is a detail view, partly in elevation and partly in section corresponding to the line A—A in Fig. 1; Fig. 6 is a longitudinal sectional view of a portion of the mechanism, illustrating the arrangement of the punches; Fig. 7 is a central transverse section through the carriage; Fig. 8 is a rear elevation of the escapement mechanism; and Fig. 9 is a side elevation of the same, viewed from the right.

The carriage 1 is mounted upon and adapted to traverse a bridge composed of front and rear bars 3 and 4 respectively that are secured, as by screws, to standards 5 and 6 attached to the base of the apparatus. This base, which consists of an open rectangular frame, preferably of hard wood, comprising sides 7 and 8 respectively parallel to and transverse to the bridge, has secured to each of its sides 8 a bar 9 furnished with indentations 10 that are successively arranged at a distance apart corresponding with the space desired between successive typed lines. The paper carrier 11, to which for holding the paper, there is attached a clip 12 furnished with a tightening screw 13 is supported upon the bars 9, by terminal pieces 14 of H-section, whose grooves 15 are adapted to engage the rails, while the pair of projections 16 in each such groove are adapted to enter a pair of adjacent indentations 10. The projections 16 on opposite sides of the terminal pieces 14 are so situated in relation to one another that when the paper and its carrier are turned over, the lines of typing on one side fall between those on the other side. For the purpose of allowing the paper to be laterally adjusted, the clip 12 is arranged to slide on the carrier 11 within limits determined by the slot 17 through which the screw 13 passes; while to prevent the clip from being easily disturbed there is provided on each side of the carrier a spring frictional device 18.

The punches 19 which may conveniently be six in number, as shown, are arranged within a central aperture 20 in the carriage 1; and their lower ends pass through suitable guiding apertures in a pair of guide plates 21 and 22 attached to downwardly projecting studs 23 upon the carriage, while their upper ends are flexibly connected to the inner arms 24 of levers 25 that are fulcrumed at 26 upon upwardly projecting studs 27, and have their outer arms connected by tensional springs 28 with the carriage, and by short rods or links 29 with the inner ends of the key levers 30 that terminate in the keys 31 and are fulcrumed on studs 32 projecting upwardly from the carriage.

The platen 33 is secured to the standards 5

and 6 beneath the track of the lower ends of the punches 19, and has formed in it three grooves 34 to receive the points of the punches, which are arranged in pairs above these grooves. In some instances there may be substituted for the grooves suitable recesses or depressions in the platen.

There is journaled upon the standard 5 a spring drum 35 to which is attached a tape or band 36 preferably of flexible steel, that is wound around the periphery of the drum, and has its end 37 attached, preferably through the intervention of a helical spring 38, to a stud 39 upon the carriage 1.

The keys 31 are preferably arranged in right and left hand groups, between which groups is a spacing key 40 that is attached to a bar 41 which lies immediately below the key levers 30, and is formed integrally with or secured to levers 42 pivoted at 43 to the carriage 1. To the bar, which, by the action of spring blades 44, is maintained in contact with the key levers 30, there is attached escapement mechanism whereby the carriage 1 is caused to traverse the bridge under the action of the spring drum 35; the arrangement being such that whenever the bar 41 is depressed either directly by the spacing key 40, or in consequence of the depression of one or more keys 31 to print a character, the escapement is thereby actuated to admit of the movement of the carriage through a space corresponding to that occupied by a single typed character.

Upon the under side of the carriage 1 there are formed guide grooves 45 that fit over the upper edges of the bars 3 and 4 of the bridge and serve to guide the carriage. The removal of the carriage from the bridge 2 is prevented by a pair of bars 46 and 47 secured to studs or projections upon the under side of the carriage, and whose projecting ends engage with the bars 3 and 4.

The escapement mechanism comprises a ratchet 48 formed upon the under side of the front bar 3 of the bridge, with which there alternatively engages one or other of a pair of detents 49 and 50, according as the bar 41 is in its normal position or is depressed under the action of the keys. The detent 49 is formed upon the extremity of a bent spring blade 51, that is attached to a lever 52 pivoted at 53 to the stud which carries the bar 47; while the detent 50 is formed upon the extremity of a lever 54 that is pivoted at 55 upon a stud 56 depending from the carriage. The fore end of the lever 52 is connected with the bar 41 by a link 57; and the levers 52 and 54 are connected together by a screwed link 58 that is surrounded by a helical compression spring 59 the extremity of which passes through a perforated lug 60 on the lever 49, and is provided with a nut 61. The operation of the escapement mechanism is as follows:—Upon the depression of the bar 41 against the action of its springs 44, the lever 52 is likewise depressed, whereupon the detent 49 being disengaged from the ratchet 48, springs forward under the action of its spring 51 over the next tooth of the ratchet; while the detent 50 is, by the compression of the spring 59 as the lug 60 descends, caused to engage with the ratchet so as to prevent the movement of the carriage. The bar 41, upon its release, is raised by the springs 44, whereupon the lever 52 is raised, together with its lug 60, which, actuating the lever 54 through the nut 61, disengages the detent 50 from the ratchet and thus allows the carriage to move forward under the action of the drum 35, until arrested by the engagement of the detent 49 with the adjacent tooth of the ratchet.

To prevent the depression of the punches to such an extent as to cause their injury or the perforation of the paper, there are provided upon the carriage a pair of stops 62 that limit the downward movement of the bar 41; while to prevent the punches from being lifted clear of the guide plates 21 and 22, there are provided upon the upper side of the carriage stops 63 that limit the downward motion of the rear arms of the key levers.

In the right hand portion of the rear bar 4 of the carriage there are provided a series of holes 64, into either of which there can be inserted a peg 65 to determine the width of margin left on the right edge of the legible side of a typed sheet. To the rear edge of the carriage there is attached a sliding bar 66 that can be adjusted and maintained in any desired position by a spring detent 67 that engages in a ratchet 68 upon the upper edge thereof; to this bar 66 there is attached a stop 69 that co-acts with a fixed stop 70, upon the bridge to limit the travel of the carriage toward the left, and a projecting spring catch 71 that, toward the end of a line of type, actuates the tongue 72 of a signal bell 73.

For the purpose of supporting the paper there is provided a gridiron comprising transverse bars 74 that are attached at one end to a bar 75 and whose other ends are supported by slots 76 in the platen.

What I claim is:—

1. An apparatus for printing embossed characters, comprising a base, a bridge supported on said base, a spring drum carried by the base, a carriage carried by the bridge and adapted to traverse the same under the tension of said drum, an escapement mechanism carried by the carriage, punches carried by the carriage, keys adapted to actuate said punches and escapement mechanism, a spacing key adapted to actuate the escapement, a platen carried by the bridge, longitudinal bars furnished with indentations arranged at equal intervals apart to correspond

with the intervals between successive lines of typing, and a paper carrier having two pair of projections on each end and each of such pair adapted to engage with a pair of adjacent indentations in said bars.

2. An apparatus of the character described, comprising a base, a bridge supported upon the base, and formed of a front and rear bar, the front bar having ratchet teeth on its lower face, a spring drum carried by the base, a carriage carried by the bridge and adapted to traverse the same under the tension of the drum, an escapement carried by the carriage and engaging the ratchet teeth carried by the bar, punches carried by the carriage, keys adapted to actuate said punches and escapement mechanism, a spacing key adapted to actuate the escapement mechanism, a platen carried by the bridge, bars carried by the base and having indentations at equal intervals apart to correspond with the intervals between successive lines of typing, a paper carrier supported upon and adapted to be moved along said bars, a paper clip adjustable lengthwise upon said carrier and adapted to receive a paper sheet that lies between the platen and punches, two pair of projections on each end of the carrier, each such pair being adapted to engage with a pair of adjacent indentations in said bars.

3. An apparatus of the character described, comprising a base, a bridge supported upon the base and formed of a front and rear bar, the front bar having ratchet teeth on its lower face, a carriage supported by the bridge and adapted to traverse the same, an escapement mechanism carried by the carriage and engaging the ratchet teeth, punches carried by the carriage and extending through a block forming a guide therefor, keys operating said punches and the escapement, a spacing key adapted to independently actuate said escapement mechanism, a platen to receive the impact of the punches, bars carried by the base and having indentations at equal intervals apart to correspond with the intervals between successive lines of typing, a paper carrier supported upon and adapted to be moved along said bars, a paper clip adjustable lengthwise upon said carrier and adapted to receive a sheet of paper that lies between the platen and punches, blocks carried by the outer ends of the carrier and straddling the bars, two pair of projections within each block, each of such pair adapted to engage with a pair of adjacent indentations in said bars.

4. An apparatus for printing embossed characters comprising a base, a bridge supported upon said base, and the front bar furnished with a ratchet, and standards supporting said bars, a carriage supported by the bars, punches mounted upon the carriage and passing through an aperture therein, key levers equal in number to and corresponding with the punches, keys upon the extremities of said key levers, upwardly projecting studs, levers fulcrumed on said studs, and flexibly connected at one end to one of said punches, tensional springs connecting said levers with the carriage, links connecting the other ends of said levers with the key levers, guide plates for said punches supported on the underside of said carriage, a grooved platen to receive the impact of the punches, a longitudinal bar beneath the key levers, spring blades that maintain said bar in contact with the underside of said key levers, a spacing key attached to said longitudinal bar, transverse bars connected with said longitudinal bar and pivoted on the carriage, a spring drum mounted upon one of the aforesaid bridge standards, a tape wound upon the drum attached to the carriage, an escapement mechanism, means operated by the depression and release of aforesaid longitudinal bar for actuating said escapement mechanism, a transverse lever pivoted to and located below the carriage, a perforated lug projecting therefrom, a spring detent attached thereto and adapted to engage with the ratchet, a link that connects said transverse lever with said longitudinal bar, a lever longitudinally arranged beneath the carriage and fulcrumed thereon, and having at one end a detent adapted to engage with aforesaid ratchet, a screwed link attached to the other end of last mentioned lever, and having its end passed through the perforation in aforesaid lug, a nut on said link-end, a spiral spring around said link, longitudinal bars furnished with indentations arranged at equal intervals apart to correspond with the intervals between successive lines of typing, a paper carrier supported upon and adapted to be moved along said bars, a paper clip adjustable lengthwise upon said carrier, two pairs of projections one on each side of the carrier, each such pair being adapted to engage with a pair of adjacent indentations in aforesaid bars, and the pairs of projections on opposite sides of said carrier being displaced in relation to each other, whereby the lines of typing on one side of a sheet of paper can be caused to fall in the spaces intermediate between the lines of typing on its other side, and upon the base a gridiron adapted to support the paper sheet.

5. Apparatus for printing embossed characters, comprising a base, a bridge supported upon said base, and composed of a rear bar and a front bar furnished with a ratchet, standards supporting said bars, a group of six punches carried by the carriage, six key levers fulcrumed upon the carriage, six keys attached to said key levers, links connecting said key levers with the punches, guide plates for said punches upon the underside of the carriage, a platen furnished with three grooves to receive the impact of the punches,

a longitudinal bar beneath the key levers, spring blades that maintain said bar in contact with the under side of said key levers, a spacing key attached to said longitudinal bar, transverse bars connected with said longitudinal bar, and pivoted on the carriage, a spring drum mounted upon one of the aforesaid bridge standards, a tape attached to the carriage and to the periphery of said drum, escapement mechanism adapted to be actuated by the depression and release of aforesaid longitudinal bar, a spring detent attached to the carriage and adapted to engage with the ratchet, a lever that is longitudinally arranged beneath the carriage and fulcrumed thereon, and is furnished at one end with a detent adapted to engage with aforesaid ratchet, a screwed link attached to the other end of last mentioned lever, a nut on said link end and around said link a spiral spring, upon aforesaid base, longitudinal bars furnished with indentations arranged at equal intervals apart, to correspond with the intervals between successive lines of typing, a paper carrier supported upon and adapted to be moved along said bars, a paper clip adjustable lengthwise upon said carrier adapted to receive a paper sheet that lies over the platen.

6. Apparatus for printing embossed characters comprising a base, a bridge supported on said base and provided with a ratchet, a spring drum carried by the base, a carriage carried by the bridge and adapted to traverse the same under the action of said drum, escapement mechanism adapted when actuated to allow the carriage to move over the bridge through distance equal to the interval between two adjacent teeth of the ratchet upon said carriage punches, keys adapted to actuate said punches and escapement mechanism, a spacing key adapted to actuate last mentioned mechanism only, a platen carried by the base, longitudinal bars furnished with indentations arranged at equal intervals apart to correspond with the intervals between successive lines of typing, a paper carrier supported upon and adapted to be moved along said bars, a paper clip adjustable lengthwise upon said carrier adapted to receive a paper sheet that lies over the platen, two pairs of projections on each end of the carrier, each such pair being adapted to engage with a pair of adjacent indentations in aforesaid bars, and the pairs of projections on opposite sides of said carrier being displaced in relation to each other, whereby the lines of typing on one side of a sheet of paper can be caused to fall in the spaces intermediate between the lines of typing on its other side, and upon the base a gridiron adapted to support the paper sheet.

7. In typewriting apparatus, the combination with a base, a carriage movable lengthwise, thereon, a platen below said carriage, imprinting mechanism mounted on said carriage above the platen, bars having upon their upper edges indentations at equal intervals apart corresponding to the space desired between successive lines of typed matter, a paper carrier supported upon and adapted to be moved along said bars, and on each two pairs of projections, on each end of the carrier, one pair on each side of the carrier, each such pair being adapted to engage with a pair of adjacent indentations, and the pairs of projections on opposite sides of each carrier being displaced in relation to each other, whereby the lines of typing on one side of a sheet of paper can be caused to fall in the spaces intermediate between the lines of typing on its other side.

8. An apparatus for printing embossed characters, comprising a base, a bridge supported on said base, ratchet teeth carried by the said bridge, a spring drum carried by the base, a carriage carried by the bridge and adapted to traverse the same under tension of the drum, an escapement mechanism carried by the carriage and engaging the teeth carried by the bridge, punches carried by the carriage, keys adapted to actuate said punches and escapement mechanism, a spacing key adapted to actuate the escapement, a platen carried by the bridge, longitudinal bars furnished with indentations arranged at equal intervals apart to correspond with the intervals between successive lines of typing, and a paper carrier having two pair of projections on each end and each of such pair adapted to engage with a pair of adjacent indentations in said bars.

9. An apparatus for printing embossed characters, comprising a base, a bridge supported upon the base and consisting of a front and rear bar, ratchet teeth carried by the front bar, a spring drum carried by the base, a carriage carried by the bridge and adapted to traverse the same under tension of the drum, an escapement mechanism carried by the carriage and engaging the teeth carried by the bridge, punches carried by the carriage, keys adapted to actuate said punches and escapement mechanism, a spacing key adapted to actuate the escapement, a platen carried by the bridge, longitudinal bars furnished with indentations arranged at equal intervals apart to correspond with the intervals between successive lines of typing, and a paper carrier having two pair of projections on each end and each of such pair adapted to engage with a pair of adjacent indentations in said bars.

10. An apparatus for printing embossed characters, comprising a base, a bridge supported on said base, a spring drum carried by the base, a carriage supported by the bridge, and adapted to traverse the same under the tension of the drum, an escapement mechanism carried by the carriage

punches carried by the carriage, keys adapted to actuate said punches, and escapement mechanism, a spacing key adapted to actuate the escapement, a platen carried by the bridge, longitudinal bars furnished with indentations arranged at equal intervals apart to correspond with the intervals between successive lines of typing, and a paper carrier having a projection on the upper and lower faces at each end and adapted to engage with the indentations in said bars.

Signed at Newcastle-on-Tyne, England, this 24th day of October 1905.

CHARLES SCOTT WATSON.

Witnesses:
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