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AUTOMATIC CENTERING SCALE FOR TYPE WRITERS.

APPLICATION FILED NOV. 18, 1911. RENEWED JUNE 24, 1912.

1,146,393. Patented July 13, 1915.

Fig. 1.

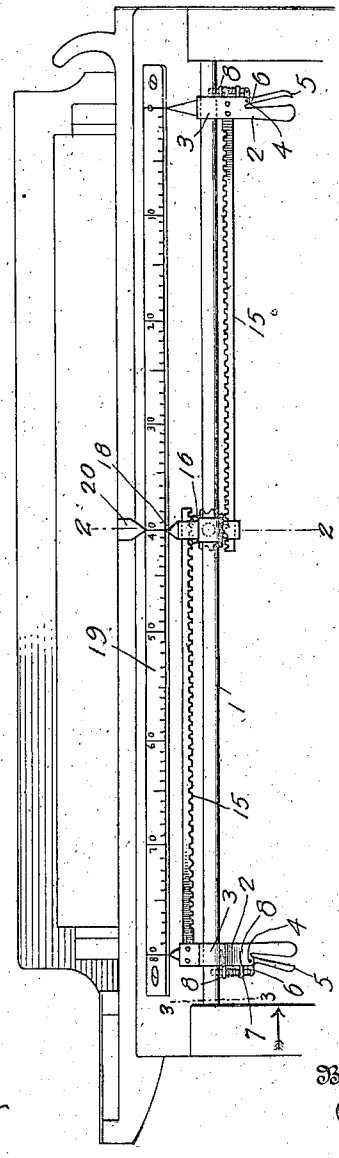


Fig. 4.

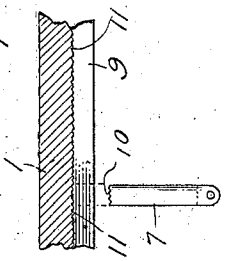


Fig. 3.

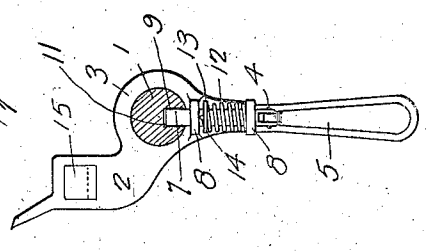
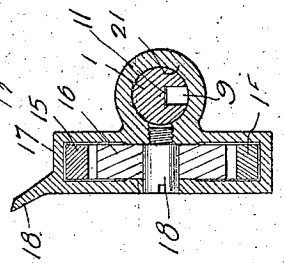


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

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AUTOMATIC CENTERING-SCALE FOR TYPE-WRITERS.

1,146,393. Specification of Letters Patent. Patented July 13, 1915.

Application filed November 18, 1911, Serial No. 661,130. Renewed June 24, 1912. Serial No. 705,622.

To all whom it may concern:

Be it known that we, HARRY BATES, a citizen of the United States, residing at West Copake, in the county of Columbia and State of New York, and CHARLES E. SMITH, a Canadian and British subject, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Automatic Centering-Scales for Type-Writers, of which the following is a specification.

This invention relates to a self-adjusting location indicator for typewriting machines, and has for its object the automatic selection and pointing out of a desired predetermined location with respect to the side margins of the typewriting, as determined by the margin-regulating devices.

A subsidiary object is to provide a device of the class mentioned, which will be neither cumbersome nor complicated, but which, on the other hand, will be exceedingly simple of construction, easy to manipulate, and positive in its operation.

The indicator may be used to locate any point with respect to the side margins, but for the purpose of illustrating the invention, the center point midway between the side margins is shown, as it is most frequently used. Hence the device may be termed an "automatic self-centering mechanism or scale."

The usual way of determining the center of the line of typewriting is to make a mathematical calculation with the aid of the scale and the adjustable margin stops which determine the ends of a line of writing; that is to say, the distance between the margin stops is halved. This is not so easy, quick or positive, say, for example, when one of the stops is at "10" and the other at "25." By this invention, the distance between the margin stops and thus between margins of the typewritten matter may be halved automatically, no matter what the respective positions of the margin stops may be. To accomplish this, a position indicator, shown in the form of a movable pointer, is joined to the margin stops by a differential connection which will maintain the pointer always midway between the stops. The differential connection shown in this instance consists in a pair of racks secured individually to the pair of margin stops, and meshing with a loose pinion carried by the pointer.

Other features and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a view in front elevation of so much of a typewriter, equipped with our improvements, as is necessary to a proper understanding of the invention at issue. Fig. 2 is a vertical, transverse section, on the line 2—2, Fig. 1. Fig. 3 is a vertical transverse section on the line 3—3, Fig. 1, looking in the direction of the arrow. Fig. 4 is a fragmentary longitudinal sectional view of the margin-stop bar, showing, also, the margin-stop pin.

Referring, now, in detail to the drawings, 1 indicates a margin-stop bar, carrying movable margin-stops 2, 2. The margin-stops may be variously mounted upon said bar; but the preferred manner is illustrated in the drawing in which the stops have each a collar or hub portion 3, through which said rod 1 projects. Fulcrumed at 4 on each of said stops is a bell-crank lever 5, to the otherwise free end of the shorter arm 6 whereof is pivoted the lower end of a vertical pin 7, guided in its movements in eyes 8, 8, carried by the body of the stop. The upper end of the pin 7 projects into a longitudinal groove 9 disposed on the under surface of the bar 1; said upper end of the pin 7 being serrated, as at 10, to engage a longitudinal rack 11 formed by the horizontal top face or wall of said groove 9. Between said eyes 8, 8 of each stop is a coiled spring 12 encircling the pin 7, said spring bearing at its lower end on the lower eye 8 and having its upper end bearing against or secured to a collar 13 encircling said pin 7 and limited in its upward movement by a pin 14 carried by pin 7. When the lever 5 is rocked inward, the pin 7 is drawn downward, releasing the serrated end 10 from engagement with the rack 11 and compressing the spring

12, and as soon as said lever is released, the spring forces the pin 7 back into engagement with the rack 11.

All of the parts so far described are old and well known in the art, and form no part of our invention, which will now be described.

Probably the simplest form of our invention is as follows: Each margin stop 2 carries a horizontally-disposed rack bar 15, which may be integral therewith, but which is preferably removably secured thereto so as to be rigid. The racks 15, 15 mesh with a pinion 16 rotatably mounted, as on an axle-screw 18^a, in a housing or slide 17 carrying a pointer 18, coöperating with a typewriter scale 19, which is of the usual construction, or with a pointer 20 on the typewriter carriage. The slide 17 carries a collar or hub portion 21, through which the bar 1 projects, and on which bar the slide reciprocates.

In the operation of the device, it will be noted that the pinion 16 is free for translation in either direction; and that the pinion 16, the slide 17, and the pointer 18 carried thereby must, by reason of the particular construction described, always occupy a position centrally between the stops, irrespective of the relative movement thereof; the pointer 18 indicating on the scale 19 the center of the line of writing. Of course, as is obvious, in assembling the parts of our invention initially, the pinion 16 is disposed exactly in the center of the scale 19 and the margin stops at the ends of the scale or at equal distances from the center thereof; so that, in all future manipulation of the stops by the operator, the pointer 18 will always automatically indicate on the scale 19 the center of the line of writing for which the stops may be set by the operator.

In further explanation of the operation, it may be said that, in assembling the parts, the pinion 16 is disposed centrally between the two stops 2, 2 (no matter at what points said stops may be in respect to the scale 19). Now, subsequent movement by the operator of either stop will cause the pinion, and thus the pointer-carrying member or slide 17 operatively associated therewith, to travel half as fast as (*i. e.*, half the distance traversed by) said stop, as moved by the operator, thus indicating the exact center between the stops, as so adjusted. This, then, is the theory of operation; that the pinion 16 and the pointer-carrying member or slide 17 operatively associated therewith travel half as fast as either one of the stops 2, 2, *i. e.*, travel half the distance of either one of said stops, when moved for purposes of adjustment of the margins.

It will be seen that the distance through which the indicator or pointer 18 is moved always bears a fixed ratio to, or more specifically, is always half the algebraic sum of the distances the stops are advanced or moved in either direction. For example, if the right-hand stop is moved to the left, or in a positive direction, as indicated by the scale from "0" to "20", and the left-hand stop is moved in the reverse or negative direction from "80" to "70" on the scale, the algebraic sum of these movements will be ten scale divisions in a positive direction or to the left, and the movement of the pointer one-half this, or five scale divisions to the left.

Instead of cöperating with the scale 19, or in addition, rather, to coöperating with the scale 19, the movement pointer 18 may coöperate with the pointer 20 on the typewriter carriage; thus, if the operator wants to center a word, it is only necessary to shift the carriage until its pointed 20 is opposite the pointer 18, then back-space half the length of the word, and write.

As is well known, some typewriting machines mount the scale 19 on the typewriter carriage, and some have the margin-stops on the carriage. We have, in this instance, shown the scale 19 not mounted on the typewriter carriage, although it is to be understood that, if desired, it may be so mounted; and also, while we have not shown the margin stops mounted on the carriage, they may be so mounted, if desired,—such constructions being old and well-known in the art.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a typewriter, movable margin-stops, and means for automatically indicating the center of a line of writing, irrespective of relative adjustment of said margin-stops, said means including: a slide carrying a pointer, and mechanism intermediate of and operatively associated with said slide and said margin-stops, for moving said slide in unison with the movement of said margin-stops.

2. In a typewriter, movable margin-stops, and means for automatically indicating the center of a line of writing, irrespective of relative adjustment of said margin-stops, said means including: a slide carrying a pointer, an independently-movable member carried by said slide, and connections between said member and said margin-stops for imparting simultaneous movement to said member and said slide in unison with the movement of said margin-stops.

3. In a typewriter, movable margin-stops, and means for automatically indicating the center of a line of writing, irrespective of relative adjustment of said margin-stops, said means including: a slide carrying a

pointer, a rotatable member carried by said slide, and connections between said member and said margin-stops for simultaneously rotating said member and reciprocating said slide in unison with the movement of said margin-stops.

4. In a typewriter, movable margin-stops, and means for automatically indicating the center of a line of writing, irrespective of relative adjustment of said margin-stops, said means including: a slide carrying a pointer, a pinion carried by said slide, and rack-bars carried by said margin-stops and engaging said pinion.

5. In a typewriter, a margin-stop bar, movable margin-stops carried thereby, and means for automatically indicating the center of a line of writing, irrespective of relative adjustment of said margin-stops, said means including: a slide carrying a pointer reciprocable on said bar, and mechanism intermediate of and operatively associated with said slide and said margin-stops for reciprocating said slide in unison with the movement of said stops.

6. In a typewriter, a margin-stop bar, movable margin-stops carried thereby, and means for automatically indicating the center of a line of writing, irrespective of relative adjustment of said margin-stops, said means including: a slide carrying a pointer reciprocable on said bar, an independently-movable member carried by said slide, and connections between said member and said margin-stops for imparting simultaneous movement to said member and said slide in unison with the movement of said margin-stops.

7. In a typewriter, movable margin-stops, and means for automatically indicating the center of a line of writing, irrespective of relative adjustment of said margin-stops, said means including: a reciprocable slide, and mechanism intermediate of and operatively associated with said slide and said margin-stops, for moving said slide in unison with the movement of said margin-stops.

8. In a typewriter, a margin-stop bar, movable margin-stops carried thereby, and means for automatically indicating the center of a line of writing, irrespective of relative adjustment of said margin-stops, said means including: a slide reciprocable on said bar, and mechanism intermediate of and operatively associated with said slide and said margin-stops, for reciprocating said slide in unison with the movement of said stops.

9. In a typewriter, a margin-stop bar, movable margin-stops carried thereby, and means for automatically indicating the center of a line of writing, irrespective of relative adjustment of said margin-stops, said means including: a slide reciprocable on said bar, a rotatable member carried by said slide, and connections between said member and said margin-stops for simultaneously rotating said member and reciprocating said slide in unison with the movement of said margin-stops.

10. In a typewriter, movable margin-stops, and means for automatically indicating the center of a line of writing, irrespective of relative adjustment of said margin-stops, said means including a normally-stationary, movable pointer-carrying member, a second normally-stationary, movable member operatively associated with said pointer-carrying member so as to move simultaneously therewith, and connections between said margin-stops and said second movable member, said connections and said second movable member being constructed and arranged to cause the latter to travel half as fast as either one of said stops, when moved.

11. In a typewriter, the combination with a pair of marginal stops, of a location-indicating means, and differential connections between said marginal stops and said indicating means, causing said indicating means to always automatically assume a predetermined relation with respect to said stops irrespective of the positions of said stops with respect to each other.

12. In a typewriter, the combination with a pair of marginal stops, of a location-indicating means, and differential connections between said marginal stops and said indicating means, causing said indicating means to halve the distance between said stops.

13. In a typewriter, the combination of means for determining the length of a typewritten line, said means being adjustable to vary the length of the line, and automatic mechanism operated by said means for indicating a predetermined point having a predetermined relation with respect to the ends of the line.

14. In a typewriter, the combination with margin-regulating devices, of a location indicating means, and driving connections between said devices, and said indicating means enabling a movement of one of said devices to be transmitted to said indicating means but to a different degree.

15. In a typewriter, the combination with margin-regulating devices for determining the margins of writing, of an indicating means operatively connected to said devices for pointing out a predetermined location with respect to the margin of writing.

16. In a typewriter, the combination with margin-regulating devices for determining the margins of writing, of an indicating means operatively connected to said devices for automatically assuming a position midway between the margins of writing.

17. The combination of a typewriter scale,

pointers adjustable along the scale, an intermediate pointer, and connections from said intermediate pointer to the first-named pointers for maintaining the intermediate pointer midway between the first-named pointers.

18. The combination of a typewriter scale, pointers adjustable along the scale, an indicator intermediate said pointers, and speed-reduction gearing between the indicator and each pointer for adjusting the indicator along the scale when either of said pointers is adjusted.

19. In a typewriting machine, the combination with left-hand and right-hand margin-stops, of an indicator, and speed-reduction means connecting said indicator to said margin-stops respectively, for moving the indicator a fractional part of the distance through which a stop is adjusted, and in the same direction.

20. In a typewriting machine, the combination with a scale, of pointers adjustable along the scale, an intermediate pointer, and rack and pinion driving connections between the intermediate pointer and the first-named pointers.

21. In a typewriting machine, the combination with a typewriter scale, of pointers adjustable therealong, an intermediate pointer, and means forming driving connections between the intermediate pointer and the outer pointers whereby, when both outer pointers are either simultaneously or successively adjusted, or when either of said outer pointers alone is adjusted, the intermediate pointer is proportionately adjusted to maintain an equal ratio of the distances separating the intermediate pointer from the outer pointers.

22. In a typewriting machine, the combination with a scale, of margin-stops, pointers carried thereby, an intermediate pointer, and gearing between the intermediate pointer and the pointers on the margin-stops for automatically adjusting the intermediate pointer when either margin-stop is adjusted.

23. In a typewriting machine, the combination with a scale, of margin-stops adjustable therealong, a pointer intermediate said stops, and mechanism between each margin-stop and said pointer operable when either margin-stop is adjusted to move said pointer in the same direction half the distance through which the stop is moved.

24. In a typewriting machine, the combination with a margin-stop bar and a margin-stop adjustable along the bar, of an indicator slidable along said bar, a pinion carried by said indicator, and a rack connected to the margin-stop and in mesh with said pinion.

25. In a typewriting machine, the combination with a margin-stop bar and margin-stops adjustable along said bar, of an indicator slidably mounted on said bar intermediate said stops, racks connected to said stops, and a pinion on said indicator in mesh with said racks.

26. In a typewriting machine, the combination with a margin-stop bar, right-hand and left-hand stops slidably mounted on said bar, and a scale, of a slide on said bar intermediate said stops, said slide having a pointer movable over the scale, racks connected to said stops and slidably supported on said slide, and a pinion on the slide in mesh with said racks.

27. In a typewriting machine, the combination of two margin stops, an intermediate indicator, and connecting means whereby in the movement of a single stop, said indicator changes its position relatively to both said stops to maintain a constant intermediary position.

28. In a typewriting machine, the combination with a scale for a letter-feeding carriage, of two indexes each adjustable along said scale, and a third index connected to both of the first-mentioned indexes to be adjusted simultaneously with the adjustment of either one of said adjustable indexes, but at a different speed, while the other of said adjustable indexes remains stationary.

29. In a typewriting machine, the combination with a scale for a letter-feeding carriage, of two margin gages each adjustable along said scale, and an index connected to both of said margin gages to be adjusted simultaneously with the adjustment of either one of said margin gages but at a different speed, while the other of said margin gages remains stationary.

30. In a typewriter, the combination, with a scale, and a movable margin gage; of an index coöperative with said scale, but independent of said gage; and a connection to enable the movement of said gage to vary the relative positions of said index and said scale.

31. In a typewriter, the combination, with a scale, and a movable margin-gage; of an index coöperative with said scale, but independent of said gage; and means, including a positive connection between said gage and said index, to enable the movement of the gage to vary the relative positions of said index and said scale.

32. In a typewriter, the combination with a scale, and a movable margin gage; of an index coöperative with said scale, but independent of said gage; and a connection to enable the movement of said gage to effect a relative movement between said index and said scale, thereby to enable the index to point out a predetermined location in a line of writing measured by the scale, one end

of which line is determined by the position of said gage.

33. In a typewriter, the combination with a scale, and a movable margin gage; of an index coöperative with said scale, but independent of said gage; and a connection to enable the movement of said gage to effect a relative movement between said index and said scale, thereby to enable the index to point out the center of a line of writing measured by the scale, one end of which line is determined by the position of said gage.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

HARRY BATES.
CHARLES E. SMITH.

Witnesses:
SAM BURR,
RAYMUND J. BUCKLEY.