Oct. 12, 1937. W. F. HELMOND 2,095,666

TYPEWRITING MACHINE

Filed Nov. 18, 1935 2 Sheets-Sheet 1

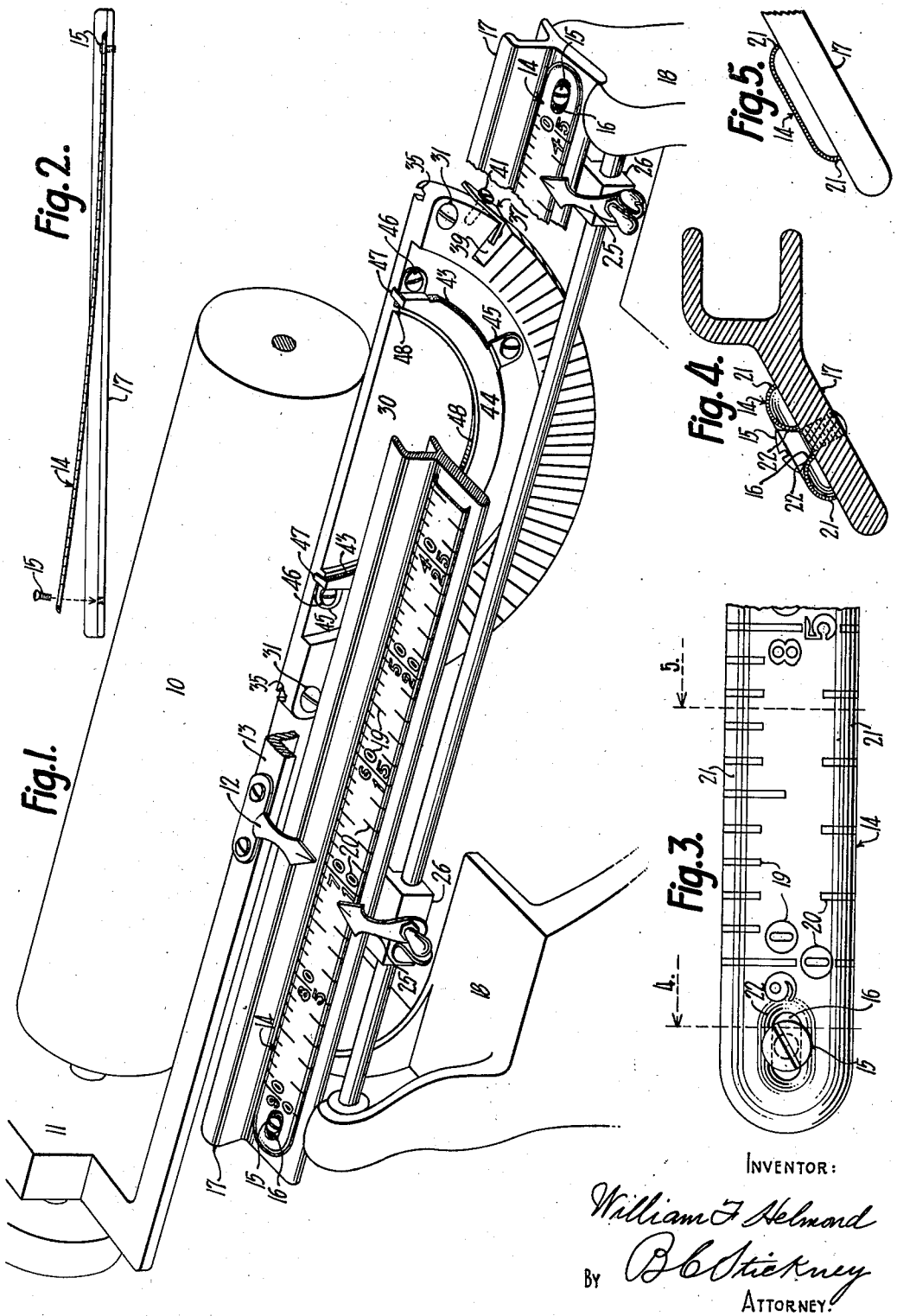


Fig. 1.

Fig. 2.

Fig. 5.

Fig. 4.

Fig. 3.

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Fig. 6.

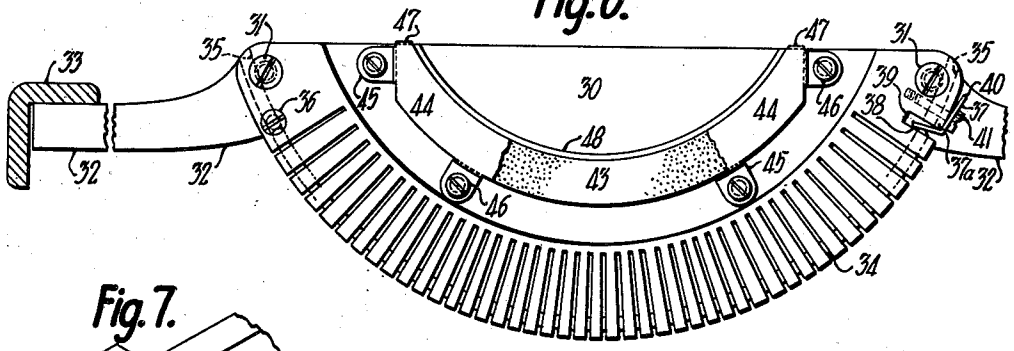


Fig. 7.

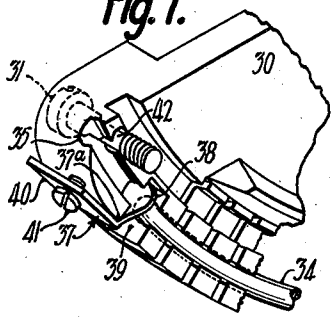


Fig. 8.

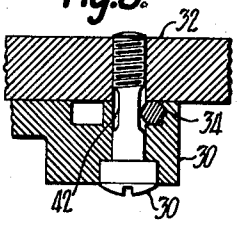


Fig. 9.

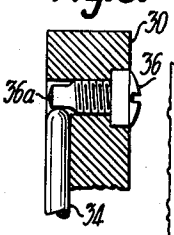


Fig. 10.

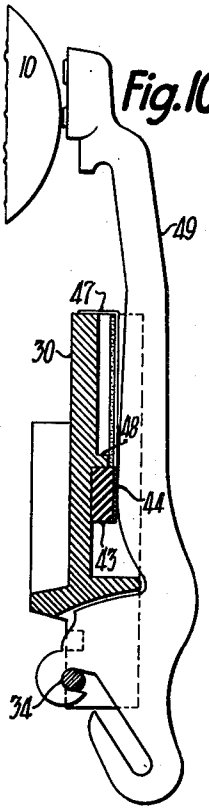


Fig. 11.

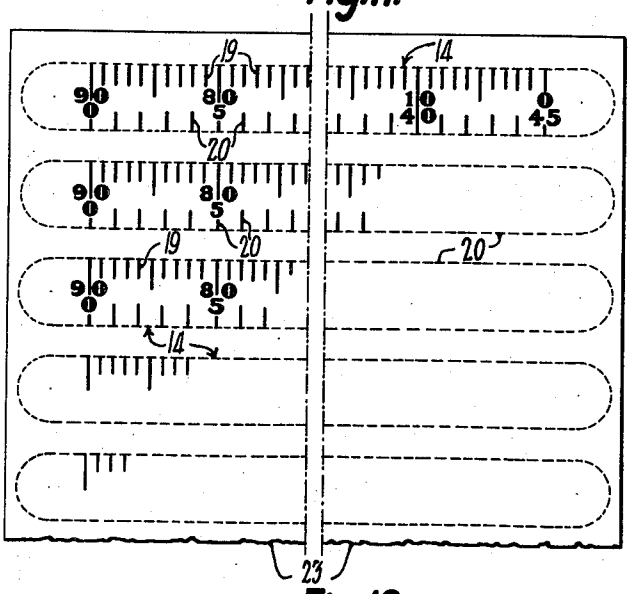
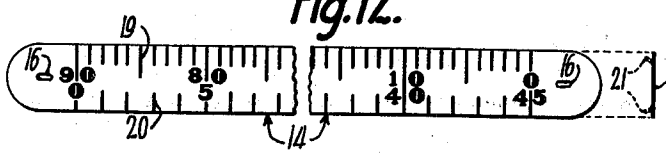


Fig. 12.



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UNITED STATES PATENT OFFICE

2,095,666

TYPEWRITING MACHINE

William F. Helmond, West Hartford, Conn., assignor to Underwood Elliott Fisher Company, New York, N. Y., a corporation of Delaware

Application November 18, 1935, Serial No. 50,268

6 Claims. (Cl. 197—194)

This invention relates to typewriting machines, and presents improvements in the design and construction of the centering and letter-gaging scale, the type-bar segment stop-ring, and the method of aligning and securing the type-bar pivot wire in the type-bar segment.

One of the improvements disclosed herein is a novel front-rail or carriage scale, formed of yieldable sheet metal with a continuous, rounded edge, to increase the strength and rigidity. A number of scales may be printed on a metal sheet, and lacquered, and formed into individual completely finished scales by punching without marring the scales. The rounded edge also adds a pleasing appearance to the scale, and presents smooth surfaces which offer no obstructions to the fingers of the operator, making it unnecessary to take the usual steps of folding over the edges of the scale or to provide a separate frame or guard into which the scale is placed. Economies in material and manufacturing costs are thereby made possible.

The invention additionally presents a novel form of sound-deadening stop-ring with which the type-bars contact when the type-head is close to the platen.

In prior forms of stop-rings having a yieldable, sound-deadening cushion interposed between an outer metal surface and the type-bar segment, examples of which are the structures disclosed in the United States patents to Kurowski, No. 1,395,503, Norin No. 1,803,125, and Corcoran No. 1,526,966, all of which have been used on the Underwood typewriter, the cushioning means is either secured to the type-bar segment, as in the patent to Kurowski, or to the metal surface, as in the Norin and Corcoran patents. The cushion, therefore, is not free to shift its position, and in spite of the metal facing plate, wear in localized spots is inevitable.

The stop-ring disclosed in the present invention comprises the combination of a segment of rubber of suitable density, or other resilient, sound-deadening material, with a concentric plate of spring steel, said plate being formed with suitable, downwardly offset flanges by means of which the plate may be fastened to the type-bar segment. The latter is formed with a concentric shoulder, so placed that said shoulder, together with the offset flanges of the steel plate, forms a pocket in which the rubber segment is held. The rubber segment is thus free to shift or vibrate independently during operation; this freedom of movement, although admittedly small, acting to equalize wear and add to the useful life of the stop-ring.

Another object of the invention is to improve the manner of securing the curved wire used as a fulcrum upon which the type-bars are pivoted around the type-bar segment of a machine, in the slot or groove provided for it in said segment.

It is often necessary to completely or partially remove this wire from the segment when replacing or repairing type-bars, and the purpose of this invention is to assure that the fulcrum-wire occupies its original position exactly, when replaced. Heretofore the replaced wire has been found to occupy different positions lengthwise. Owing to minute discrepancies in the cutting of the groove, in the curving of the wire, and the wearing of the wire in spots by the type-bars, it results that, unless the wire is restored to its original position, the types will not print in the same places because, in effect, the pivot points of the type-bars will have been altered. One type will print a shade higher on the work-sheet, and another type will print alongside of it, but in a position a shade lower. Thus the discrepancy is doubled with consequent detriment to the appearance of the work.

The fulcrum-wire is set endwise into the groove, and thrust around therein until it abuts against a gaging-screw which intersects the groove near the left end thereof. A novel, spring-like, angular clip is employed to hold the fulcrum-wire against the gaging-screw, said clip being adjustably secured, by means of a screw, to the type-bar segment, and arranged, on suitably tightening said screw, to exert a yieldable force against the right end of said wire. The clip is additionally arranged to be readily freed of contact with the wire, to permit the removal of the latter, without the necessity of removing the clip or its retaining screw from the segment.

The segment is held in place on the machine by means of screws which pass through the thickened wall of the segment. The screw-holes intersect the groove into which the fulcrum-wire is set. However, each screw is formed with a reduced neck-portion, so that the shank of the screw does not protrude into the groove or channel which is provided for the fulcrum-wire. The wire may be removed without disturbing the screws which hold the segment in place on the machine.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a fragmentary perspective of a type-

writing machine, showing the new scale, the type-bar segment with the fulcrum-wire retainer clip, and the rubber and steel stop-ring.

Figure 2 shows the means of fastening the scale.

Figure 3 is an enlarged view of a portion of the new scale.

Figure 4 is an enlarged section through the front rail of the machine of Figure 1, the scale and its fastening.

Figure 5 is a section of the scale taken through point 5 of Figure 3.

Figure 6 is an elevation of the type-bar segment, showing the fulcrum-wire and retainers, etc.

Figure 7 is a perspective of the right rear portion of the segment.

Figure 8 shows the clearance between the reduced neck-portion of the segment-screw and the fulcrum-wire.

Figure 9 shows the fulcrum-wire abutting against the left-hand gaging-screw.

Figure 10 is an enlarged section of the segment and stop-ring, showing a type-bar in printing position.

Figure 11 shows a series of scales printed on a sheet of metal, ready for punching.

Figure 12 shows a punched scale-blank, ready to be formed.

A platen 10, Figure 1, is journaled in a carriage 11. A pointer 12 is fastened to a carriage-rail 13. A front scale 14 is fastened with screws 15, passing through slots 16, to a front rail 17 of the machine frame 18. Scale 14 has two sets of graduation marks, the upper one 19 for the usual purpose, and the lower one 20 for centering. The scale is punched out of thin metal to reduce weight and cost, and is given a rounded continuous edge 21, with the edges of the slots 16 also rounded, as shown in Figure 4. Although the scale 14 is made of thin metal, the continuous rounded edge strengthens the structure and provides an even bearing surface all around. By similarly rounding the edges of the slots 16 so as to have the lower peripheries of said edges in planar relationship with the scale edges, as shown in section in Figure 4, a double arch structure is formed, the shoulders 22 of said arch structure taking up the thrust imposed by tightening screws 15, and preventing the collapse or distortion of the scale 14, or the cracking of the scale finish.

The spring-like tension of the scale, which is formed to have a longitudinal sweep or bow when relaxed, as shown in Figure 2, affords a perfect contact between scale and front rail. The scale 14 is first loosely fastened with one screw 15 to one end of the front rail 17. Then by slightly pressing the scale down on its opposite end, the second screw may be inserted and loosely fastened. The scale must now be centered exactly to the type-guide of the machine (not shown), and then the screws 15 may be tightened. The whole scale now being in a sprung condition, it is found that even very long long scales may be securely fastened with only one screw at each end.

Figures 11 and 12 show steps in the manufacture of the scales. The thin metal sheet 23 may first be sprayed with paint, and, after drying, the two sets of graduations 19 and 20, in different colors, may be printed on the painted surface. A number of scales, as shown by dotted lines 24, Figure 11, are printed over the sheet, with separation for the punching die to clear the printed scales. The sheet may then be lacquered, or given a similar transparent finish coating. The individual, printed scales, shown in Figure 12, are then punched, to exact size, out of the sheet 23. In the same operation the slots 16 are punched, said slots consisting, in this stage, only of small incisions. The next operation gives them final shape. The operation of giving the scale its final form, with rounded uninterrupted edges, including the slot-holes, may be performed by a suitable die. Burrs which may develop during the forming operation may be removed by a simple grinding or filing operation. Figure 12 shows the printed and punched-out flat scale, ready to be formed to its final shape (see dotted lines 21 in section of Figure 12).

Because of its rounded edges the scale, when mounted upon the front rail of the machine, offers no obstruction to the fingers of the operator.

It will be seen from Figures 1 and 3 that both sets of graduations are carried over the rounded edges of the scale, for easy reading, as the graduations are outstanding against pointer 12 on the carriage-rail 13 and against pointers 25 on the margin-stops 26.

In Figure 6, a type-bar-carrying segment 30 is mounted by screws 31 upon support 32, fastened to cross-member 33 of the machine-frame. A fulcrum-wire 34 on which type-bars 49 are pivoted, as shown in Figure 10, slidably fits into a groove 35 in the segment. The rounded left end of the wire abuts against a gaging screw 36, Figure 9, which is formed with a concentric, cylindrical tip 36^a to insure a uniform point of contact with said fulcrum-wire. The rounded right-hand end of the wire is maintained under constant pressure by a bent spring-like retainer clip 37. One arm 38 of this clip occupies a slot 39 in the segment, where it normally engages the right end of wire 34, as shown in Figure 6. The outer arm 40 is adjustably held by a retainer-screw 41 on the periphery of the segment, said screw, when tightened, acting to rock the clip 37 about a fulcrum-point 37^a, so that arm 38 resiliently engages the end of wire 34, urging it into contact with the gaging screw 36, and thereby exactly positioning the wire 34 in groove 35. The retainer-screw 41 makes it unnecessary to remove the segment 30 from the machine in order to make a change of a type-bar, as said screw can be adjusted from the front or right-hand side of the machine. This arrangement is inexpensive. Screw 41 should be tightened only so far as to have the retainer clip 37 firmly holding the fulcrum-wire in position, but the resilient nature of clip 37 prevents the imposition of an excessive stress on wire 34 caused by excessively tightening screw 41. Figure 7 shows an enlarged rear view of the right-hand side of the segment.

To replace any type-bar, gaging screw 36 at the left hand is backed up far enough to clear the groove 35. Retainer-screw 41 is also loosened sufficiently to allow the retainer clip 37 to be moved out of the path of wire 34, thus clearing the groove at the right-hand side. The end of a curved wire or similar device may now be introduced into the groove 35 at the right or left side, and pushed against the end of the fulcrum-wire to displace the latter far enough to clear the desired type-bar which is to be exchanged. As previously stated, it is important to have the fulcrum-wire occupy its original position when replaced. After the replacement or exchange of type-bars is finished, the ful-

crum-wire, if completely removed, can be reinserted into its groove and pushed until it abuts against the screw **36**, which in the meantime has been tightened. The retainer clip **37** may now be brought back into slot **39** of the segment, and retainer-screw **41** tightened enough to permit the arm **38** of retainer clip **37** to hold the fulcrum-wire firmly in position. Said wire is then correctly replaced.

The screws **31**, which hold segment **30** against the support **32**, pass through the portion of the segment occupied by the groove **35**. To clear the fulcrum-wire, these screws are provided with reduced neck-portions **42**, as shown in Figures 7 and 8. It is thus rendered possible to remove the fulcrum-wire without disturbing screws **31**.

A segment **43**, of rubber or similar resilient material, is disposed behind a thin plate **44**, preferably of spring steel, which covers the surface of said segment, as shown in Figures 1 and 6. Plate **44** is secured to the surface of type-bar segment **30** by means of screws **46**, which pass through a plurality of integral, downwardly offset flanges **45** formed in said plate, the offset depth of said flanges being in suitable relation to the thickness of the segment **43** to cause plate **44** to rest on the surface of segment **43** when the flanges **45** are secured to segment **30**. A pair of ears **47**, formed at each end of plate **44** to overlie segment **43** and segment **30** act to facilitate the assembly of the plate **44** and segment **43**.

A shoulder **48**, formed in segment **30**, and substantially concentric therewith, co-operates with the plate **44** and the flanges **43** to form a pocket in which segment **43** is held. The top of shoulder **48** is preferably below the outer surface of segment **43**, so that there is no possibility of contact between plate **44** and shoulder **48**.

The segment **43**, not being rigidly secured to the type-bar segment **30** or to the plate **44**, is thus free to vibrate independently of these members. Said segment **43** thus co-operates with plate **44** to form a stop-ring of sufficient resilience to impart the necessary springing action to the type-bars **49**, and yet provides a yielding cushion to resist the continued blows of said type-bars. The type-bars **49** strike the spring steel plate **44**, which acts to prevent the defacement of segment **43**, said segment cushioning the blow, and reducing the noise of impact.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. For use with a typewriting machine, a pressed metal, graduated scale formed with a continuous, downwardly extending rounded edge, said scale having mounting holes near the ends thereof.

2. For use with a typewriting machine, a pressed metal, graduated scale formed with a continuous, downwardly extending rounded edge, said scale having mounting holes near the ends thereof, said scale having a longitudinally bowed form when relaxed.

3. A graduated metal scale for use with a typewriting machine, said scale being substantially arcuate in cross-section by reason of a continuous rounded edge, said edge having its opposite, lower surfaces substantially in planar relation.

4. A metal scale for use with a typewriting machine, a continuous, downwardly turned flange formed on said scale during the manufacture thereof, said flange stiffening the scale and imparting an even bearing surface thereto, and one or more sets of graduations delineated on the upper surface of said scale, said graduations extending down over the flanges of said scale.

5. A metal, graduated scale for use with a typewriting machine, said scale having elongated mounting holes formed near the ends thereof to accommodate means for securing said scale, and an integral downwardly extending wall formed around the respective peripheries of said scale and said holes, the lower surfaces of said walls being in planar relationship to permit said scale evenly to contact any level surface on which it may be mounted.

6. A metal, graduated scale for use with a typewriting machine, said scale having elongated mounting holes formed near the ends thereof to accommodate means for securing said scale, and an integral downwardly extending wall formed around the respective peripheries of said scale and said holes, the lower surfaces of said walls being in planar relationship to permit said scale evenly to contact any level surface on which it may be mounted, the walls of said mounting holes arranged to co-operate with said securing means to prevent the collapse thereof during said mounting.

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