

May 24, 1938.

N. DODDS

2,118,343

LINE JUSTIFIER FOR TYPEWRITERS

Filed Dec. 16, 1936

2 Sheets-Sheet 1

Fig. 1.

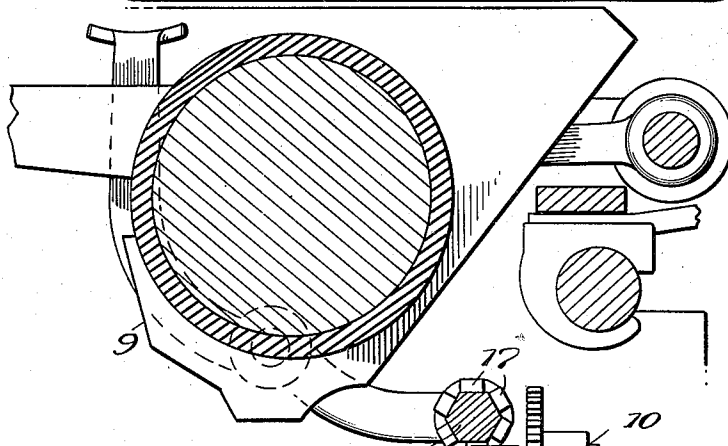
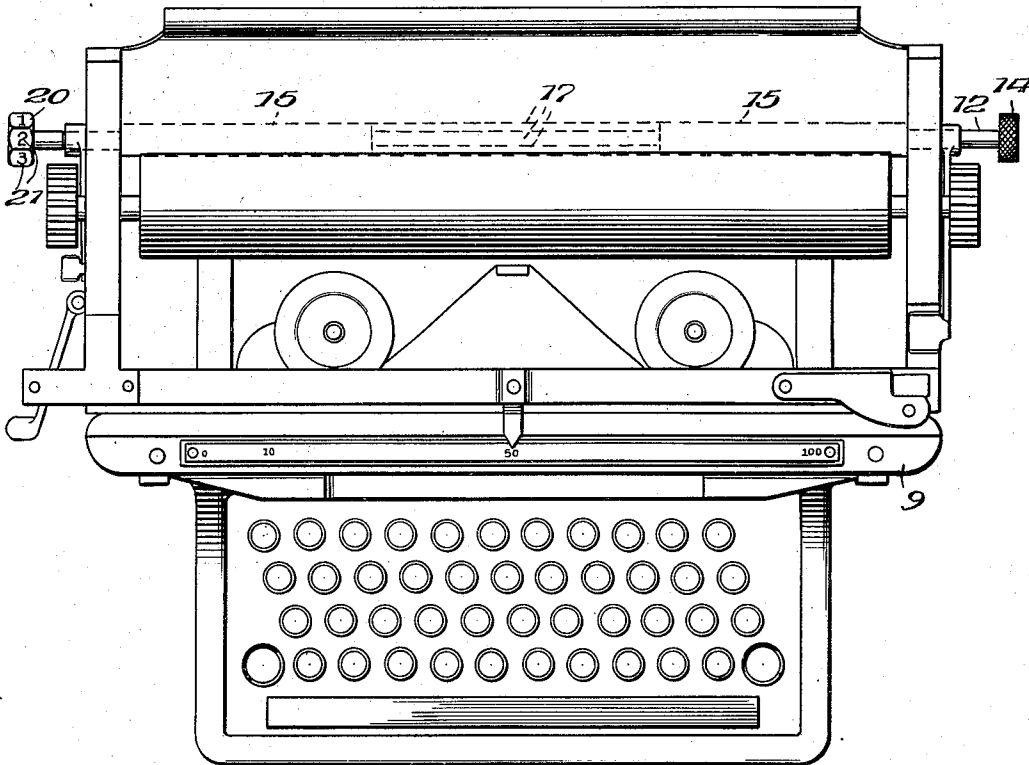
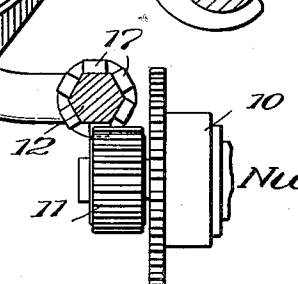


Fig. 2.



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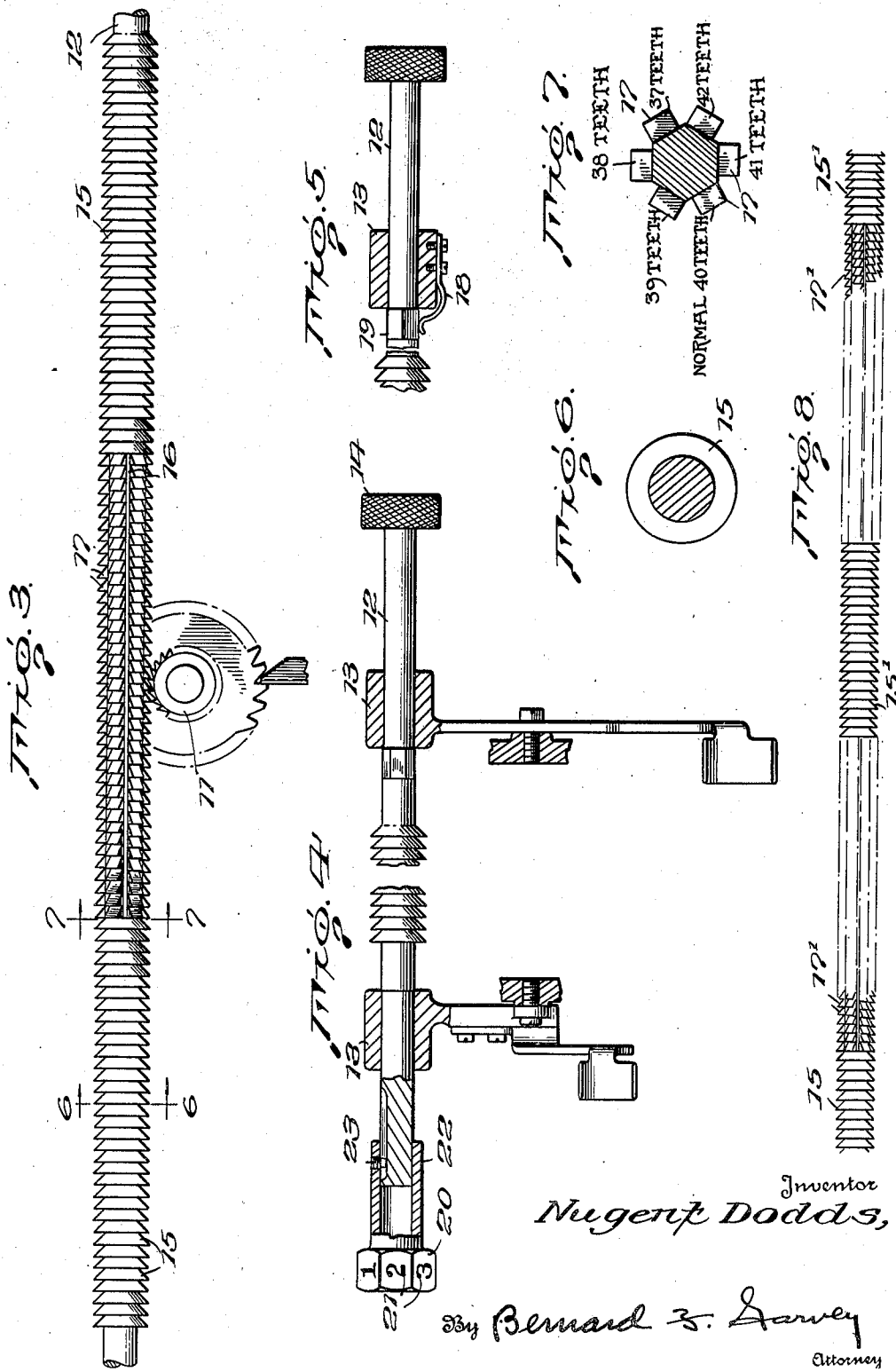
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LINE JUSTIFIER FOR TYPEWRITERS

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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LINE JUSTIFIER FOR TYPEWRITERS

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Application December 16, 1936, Serial No. 116,179

4 Claims. (Cl. 197-84)

My invention consists of a line justifier for typewriters and is designed as an improvement over inventions of this character employing separate rack bars each of which uses teeth of uniform pitch throughout its length, and each bar having a different number of teeth, an independent escapement or pinion and detent being also necessary with this type of rack. I further contemplate an improvement over rack bars with staggered justifying areas which may be brought into use only after an adjustment of the bar. I have found that such structures are not practical and are incapable of use on modern typewriters.

My invention particularly includes a composite bar which may be substituted for the carriage rack bar of standard typewriters for engagement with the escapement mechanism in the customary operation of the typewriter.

The rack bar of my invention uses standard pitch teeth at both ends of the bar to effect standard beginning and ending of lines, an intermediate portion or portions of the bar having the teeth arranged closer together or spaced further apart than the standard pitch teeth, said portion or portions of the bar constituting the justifying area or areas.

With the present invention any length line may be justified if the line is longer than the justifying area, and permits the justification of narrow columns, side by side and of whole pages, without removing the work from the machine. Furthermore, the rack bar shifts freely in the usual manner as the teeth move freely over the escapement pinion.

Various other objects of the invention will be apparent from the following description of the present preferred forms of the invention, taken in connection with the accompanying drawings, wherein:—

Fig. 1 is a top plan view of a typewriter of standard construction illustrating the application of my improved escapement bar thereto.

Fig. 2 is a detail enlarged fragmentary cross sectional view of a typewriter illustrating the application of my improved escapement rack bar, the latter being shown in cross section.

Fig. 3 is a fragmentary elevational view of an escapement rack bar made in accordance with the present invention showing the same operatively engaged with a typewriter escapement.

Fig. 4 is a detail fragmentary elevational view of an escapement rack bar constructed in accordance with the present invention illustrating

the manner of mounting the same in a typewriter.

Fig. 5 is a fragmentary elevational view of one end of an escapement rack bar showing the same mounted in a typewriter and illustrating means for retaining the rack bar from independent movement.

Fig. 6 is a sectional view taken on the line 6-6 of Fig. 3 looking in the direction of the arrows showing the normal or standard ring teeth of the present invention.

Fig. 7 is a sectional view taken on the line 7-7 of Fig. 3 looking in the direction of the arrows, showing the justifying teeth forming a part of the present invention, and

Fig. 8 is a fragmentary elevational view of a modified form of escapement rack bar made in accordance with the present invention.

To illustrate the application of my invention, a typewriter 9 of standard construction is shown, which includes an escapement mechanism, generally designated 10, which mechanism includes a toothed pinion 11. The escapement mechanism and pinion thereof are of standard construction and are adapted for engagement with the rack bar of the carriage in a manner well known in the art.

In the present invention, I substitute for the standard rack bar, commonly employed in typewriters, a novel form of bar constructed in accordance with the present invention, generally designated 12. The ends of said bar are circular in cross section and are adapted to be rotatably mounted in typewriter carriage bearings 13, one end of the bar being equipped with a knurled knob 14 to permit manual rotation of the bar in a manner and for a purpose more fully hereinafter set forth.

The bar 12 is provided adjacent each end with a plurality or group of standard pitch ring teeth 15, each of which is of truncated cone shape. As is manifest the teeth will move freely over the escapement pinion 11 when the rack bar is moved in one direction, but are intercepted by the teeth of the pinion to move the carriage in the opposite direction when the typewriter keys are depressed in a manner well known in the art. The teeth 15 are employed so that the beginning and ending of each line of type is standard or normal. The justifying area of the rack bar is intermediate the ends of the latter between the areas of the terminal standard or normal pitch teeth 15. In Figure 3 the justifying area is indicated at 16. To provide the justifying area of the zone, the rack bar 12 is of polygonal con-

figuration in cross section, as shown in Figure 7 of the drawing, each plane or face of the bar in this zone being equipped with a lineal series of teeth 17, the teeth of all but one of said series being spaced further apart or closer together than the teeth 15, so that the appropriate justification of a type line may be made. Obviously the spacing of the teeth 17 further apart or closer together within said justifying zone varies the number of letter-feeding steps effective within said zone. By arranging the justifying area or zone intermediately in the rack bar, the justified portion of the line will not be discernible especially in view of the fact that both ends of the line for an appreciable distance will be normal.

It is to be understood that instead of having a single justifying area or zone, as shown in Figure 3 of the drawings, I may provide an additional justifying zone or zones, as shown in Figure 8 to justify adjacent columns. Where this form of rack bar is desired I provide terminal teeth 15' which are of normal or standard pitch, as are the teeth 15, and in addition provide a zone of said teeth midway the ends of the bar or at some intermediate portion along the bar with a lineal series of teeth 17' formed between the groups of teeth 15', each group of the lineal series of teeth 17' constituting a justifying zone or area. By the employment of this construction, two opposite pages or book sheets can be made at one operation. Additionally by use of a wide carriage margin, a newspaper having a plurality of columns may be set up and each column may be justified, it being only necessary to provide an adequate number of justification zones with a space or two of standard pitch teeth between the zones. A set up can be effected without taking the paper from the machine and adapting the invention for making photographic plates for multi-lith or other lithographic reproductions.

In order to retain the rack bar from independent movement, I provide suitable locking means which, in the present instance, consists of a flat spring 18, one end of which is anchored on one of the carriage bearings 13, the opposite end yieldably engaging one of the flat faces 19 of the rack bar in proximity to said bearing.

Before commencing to type a line it is, of course, necessary that the particular lineal series of teeth desired for justification of the line be brought into play and for this purpose I employ a knob 20, which is of polygonal configuration corresponding to the contour of the justifying zone of the rack bar. Each face of the knob is provided with indicia 21, said indicia corresponding with the lineal series of teeth of the justifying area or zone. The knob 20 has a sleeve 22 issuing therefrom which engages over the end of the shaft 12, also to that which carries the

knurled knob 14. The sleeve and knob are slidably movable longitudinally on said rack bar to permit the knob to be moved inwardly toward the typewriter carriage when not in use. Suitable means 23 are employed to prevent rotation of the knob 20 and sleeve 22 on the rack bar.

It is to be understood that regardless of the number of justifying areas or zones which may be employed, the right and left margins of the line will always be even, because the work commences and ends in the standard areas of the rack bar or in the areas where the teeth are of standard pitch or standard space.

The "standard" pitch referred to above means the pitch which is used throughout, in the embodiment shown, in typing an unjustified line. One lineal series of teeth 17 may be standard, that is, equal in pitch to the teeth 15.

Furthermore by reason of the configuration of the teeth herein employed, the rack bar is freely movable over the escapement pinion without the necessity of lifting or adjusting the rack bar. Various changes, may, of course, be made in the invention within the scope of the claims hereto appended.

What is claimed is:

1. An escapement rack for typewriters with ring teeth on its opposite ends, and lineal teeth embodied in said rack between the ring teeth.

2. A typewriter escapement rack for engagement with the escapement part of a typewriter, ring teeth formed on each end of said rack and a group of lineal series of teeth formed on said rack between the ring teeth and symmetrical with the latter to permit uninterrupted movement of the rack bar over the escapement pinion.

3. A line justifier for typewriters including a rack bar, teeth of standard pitch on the opposite ends of the bar, a plurality of series of teeth on said bar each of which series extends between the standard pitch teeth, the teeth of each series being of different pitch from the pitch of the other series.

4. In an escapement controlled typewriter, means to justify the margins of two adjacent columns, said means including a plurality of separated groups of rack teeth adapted to cooperate with the escapement at the beginning and ending of each columnar line, the rack teeth of all of the separated groups being the same pitch, lineal series of line justifying rack teeth intermediate said separated groups of teeth, the teeth of each lineal series, for a columnar line, being of different pitch from the pitch of the other series for said columnar line, and means to select any lineal series of different pitched teeth for cooperation with the escapement.

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