Nov. 23, 1965 R. J. CURRY 3,218,720

COPY FITTING DEVICE

Filed Dec. 18, 1961 2 Sheets-Sheet 1

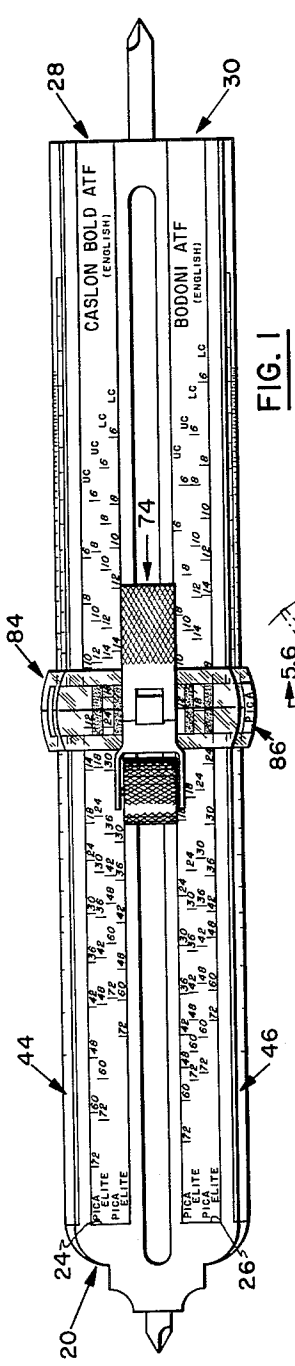



FIG. 1

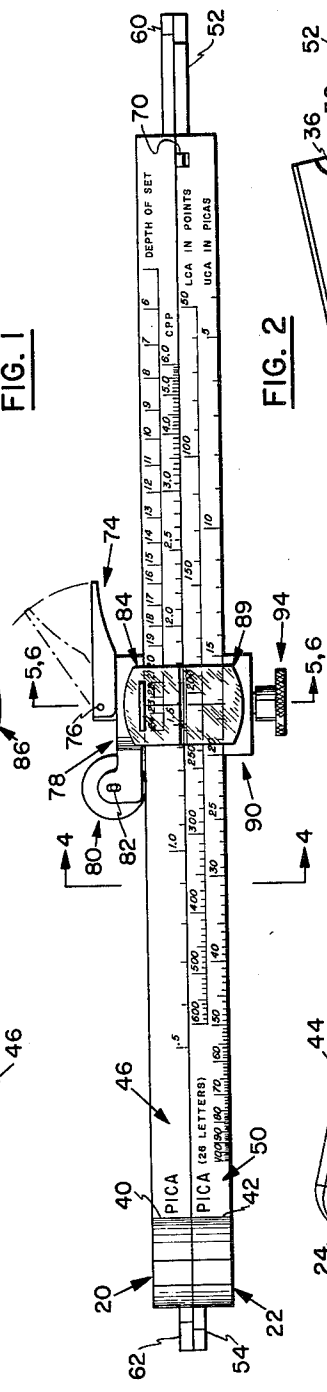



FIG. 2

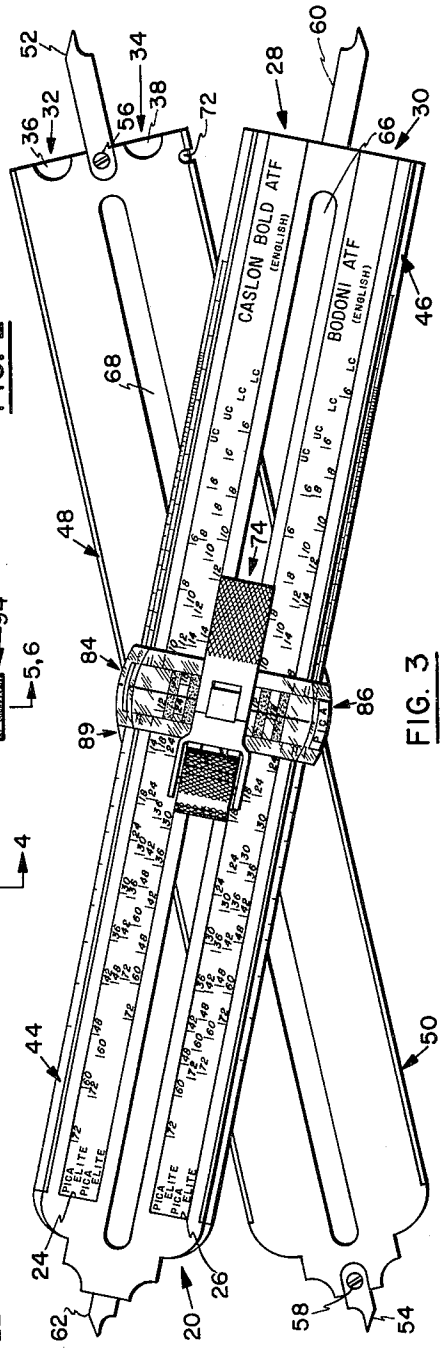



FIG. 3

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COPY FITTING DEVICE

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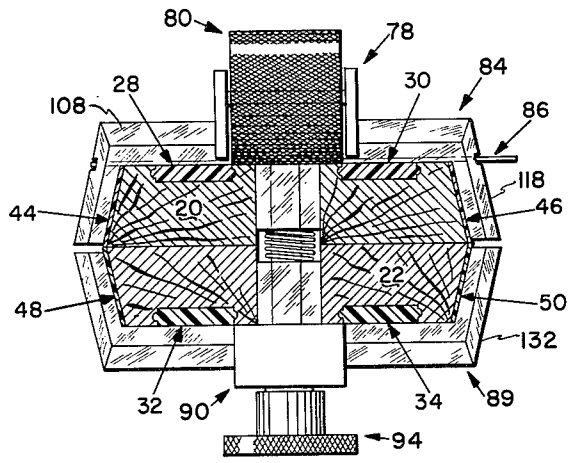



FIG. 4

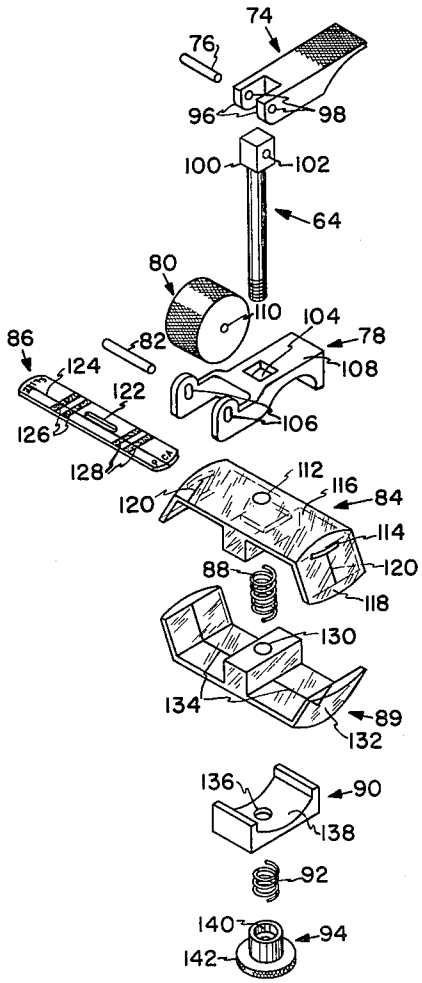



FIG. 7

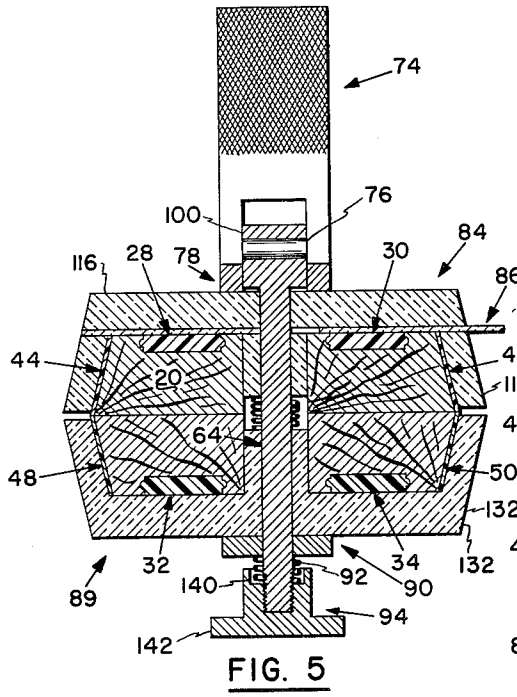



FIG. 5

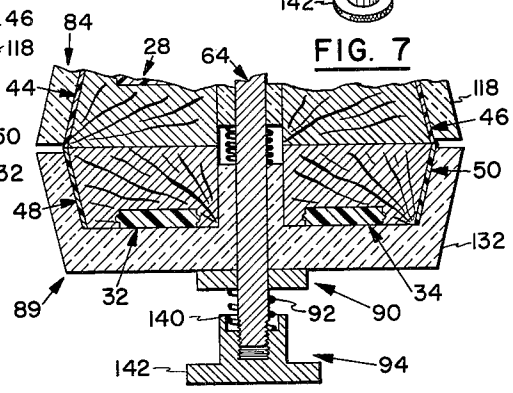



FIG. 6

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3,218,720

# COPY FITTING DEVICE

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Filed Dec. 18, 1961, Ser. No. 159,990
5 Claims. (Cl. 33—150)

This invention relates to a device for fitting copy prepared on a typewriter to a layout wherein this copy is to be set in type. It relates particularly to a device for effecting such fitting of copy in layouts intended to include both heading and body or text matter. It relates more particularly to a device for effecting such fitting in layous which are defined not only by width but also by depth. It relates still more particularly to a device for fitting copy according to all of the foregoing conditions with the further condition that the copy has been prepared on a standard typewriter.

For purposes of this invention, a standard typewriter is one which is characterized by equal character spacing or carriage advance for all key or spacebar strokes. In particular, a standard typewriter is to be distinguished from a proportional spacing typewriter having an action which provides greater carriage advance for key strokes of wide letters than for those of narrow letters. The two standard typewriters in most common use are the pica typewriter which provides ten characters per inch, and the elite typewriter which provides twelve characters per inch.

According to this invention there is provided a device which has the general form of a pair of proportional dividers; that is, it has the form of two straight leg members joined one to the other by a shiftable pivot assembly, and each having a pointed or edged element at each end. At least one of the leg members has at least one visible scale disposed lengthwise upon it which is readable against an indicator on the pivot assembly, and which, while it may be of any one of a number of specific designs, is in the broad sense one which is laid out according to a reasonable relation between length of a given text composed on a typewriter and the length of the same text set in type, with these lengths being measured as distances between the tips of the pointed or edged elements at corresponding ends of the leg members.

Further according to this invention, at least one leg member of the device provided has at least one visible scale disposed lengthwise upon it which is readable against the pivot assembly indicator and which is based on the ratio of the depth between lines of text of determinate spacing, double spacing, for example, composed on a typewriter and the line-to-line depth to which type will or is to be set, across a range of point sizes, with these depths being measured as distances between the tips of the pointed or edged elements at corresponding ends of the leg members. Allowance is made for leading by simply adding the desired leading in points to the type size in points for purposes of establishing an indicator setting on the scale.

Application of scales to a copy fitting device according to this invention may be effected in a variety of ways. The scales may, for example, be bonded, engraved, painted, or printed directly upon the leg members of the device. Further, they may be prepared in strip form for easy insertion into and removal from slots or grooves in the leg members. As so prepared, there may be one or more than one scale on one side of a given strip or on both sides.

It is also contemplated that a copy fitting device according to this invention have a pivot assembly which includes a clamping or locking mechanism to provide substantially positive retention of the assembly in any



selected location lengthwise with respect to the leg members, and likewise maintain a selected angular relation between the leg members themselves in spread condition, this mechanism being easily releasable to allow shifting of the pivot assembly when desired.

It is also contemplated that a copy fitting device according to this invention have a pivot assembly which includes a fine adjustment or creeper mechanism to provide precise alignment of the indicator of the assembly with any graduation of a visible scale on the device.

It is also contemplated that a copy fitting device according to this invention have a pivot assembly which includes a selective blankout mechanism whereby in one adjustment of this mechanism at least one visible scale on the device which would possibly be readable against the assembly indicator is locally blanked out to become unreadable, at the same time that reading against the indicator of at least one other visible scale is allowed, and in another adjustment said other scale is rendered locally unreadable while reading of said one scale is allowed.

These and other particular features of the copy fitting device of this invention as well as its general nature and substance will be more clearly perceived and fully understood by referring to the following description and claims taken in connection with the accompanying drawings in which:

FIG. 1 represents a plan view of the copy fitting device of this invention in an embodiment having flat, removable strip scales inserted directly into the leg members, the device being shown with its leg members in parallel alignment;

FIG. 2 represents a side elevation view of the copy fitting device of FIG. 1;

FIG. 3 represents a plan view of the copy fitting device of FIGS. 1 and 2 with its leg members spread;

FIG. 4 represents an enlarged view in transverse sectional elevation through the copy fitting device of FIGS. 1 and 2 taken along line 4—4 in FIG. 2 in the direction of the arrows;

FIG. 5 represents an enlarged view in transverse sectional elevation through the copy fitting device of FIGS. 1 and 2 taken along line 5—5 in FIG. 2 in the direction of the arrows with the locking lever of the pivot assembly raised;

FIG. 6 represents a view taken along line 6—6 in FIG. 2 similar to a lower fragmentary portion of FIG. 5 with the clamping nut of the pivot assembly in loosened position with respect to the pivot shaft thereof;

FIG. 7 represents an exploded view of the pivot assembly of the copy fitting device of FIGS. 1 and 2.

Referring now to the drawings in detail, especially FIGS. 1, 2, 3, and 4 thereof, the embodiment of the copy fitting device of this invention illustrated therein has an upper leg member 20 and a lower leg member 22. The upper surface of the upper leg member is provided with two longitudinally extensive grooves. Each of these grooves is open at one end and closed at the other. The shoulder surfaces whereat these grooves terminate at their closed ends are designated 24 and 26 in FIG. 1. Within the grooves in upper leg member 20 are slidably removable strip elements 28 and 30 carrying scales of a nature to be described hereinafter. In their working positions, strips 28 and 30 are butted against shoulder surfaces 24 and 26 and are retained in their respective grooves by the friction of a close sliding fit. The lower surface of lower leg member 22 is provided with grooves similar to those in the upper surface of the upper leg member, and strip elements 32 and 34 are shown within these grooves. All strip elements 28, 30, 32, and 34 terminate substantially flush with the open ends of the grooves wherein they are

located. Cut-out regions such as semi-circular relief cuts 36 and 38 in lower leg member 22 are provided in each leg member to allow thumb and finger gripping of strips 28, 30, 32 and 34 for easy removal of these strips from the leg members.

The narrow sides or edges of leg members 20 and 22 are of a somewhat sloping nature with respect to the relatively wide upper and lower surfaces of these members, and on each leg member they are undercut back to shoulder surfaces in longitudinal alignment with shoulder surfaces such as 24 and 26 of the grooves in that leg member. Side shoulder surfaces 40 and 42 on the upper and lower leg members respectively are designated in FIG. 2. Butting against the side shoulder surfaces of the leg members and permanently affixed to these members are strip elements 44, 46, 48, and 50 carrying scales of a nature to be described hereinafter.

Lower leg member 22 is recessed at either end on its upper surface to receive pointed or edged elements 52 and 54 which may be referred to respectively as a long point and a short point in keeping with common usage. These points are affixed to the lower leg member by screws 56 and 58. In their particular embodiments shown, elements 52 and 54 terminate in edges rather than actual points. This is for the purpose of minimization of wear of these elements at their ends with resultant change in the distance between them as measured from end to end. Upper leg member 20 is provided with long and short points 60 and 62 similar to points 52 and 54 on the lower leg member. Within very close limits, the end-to-end distance between points 60 and 62 must be the same as that between points 52 and 54.

Upper and lower leg members 20 and 22 are joined by a shiftable pivot assembly of a nature to be described hereinafter. It may be noted at this point, however, that this assembly includes a pivot pin or shaft 64 with respect to which lower leg member 22 can be rotated while upper leg member 20 cannot. The upper and lower leg members are provided respectively with through-going central and longitudinal slots 66 and 68 to accommodate shaft 64 as the pivot assembly is shifted. Additionally, upper leg member 20 is provided with a downwardly extending alignment pin 70 near one edge of its lower surface, and lower leg member 22 is provided with a notch 72 in the corresponding edge of its upper surface to receive this pin. Pin 70 and notch 72 are so located longitudinally on and in their respective leg members that when the leg members are in parallel alignment as shown in FIGS. 1 and 2 with pin 70 seated in notch 72 there is essentially exact alignment of the edged ends of long points 52 and 60 and, consequently, of the edged ends of short points 54 and 62.

The structure of the pivot assembly of the apparatus embodiment of this invention shown in FIGS. 1, 2, 3, and 4 will now be considered. In this connection, reference should be had also to FIGS. 5 and 6. On an element-by-element basis as shown in FIG. 7, the pivot assembly comprises the following: locking or clamping lever 74, pivot shaft 64, pivot pin 76, upper pressure piece 78, creeper wheel 80, axle pin 82, upper viewing piece 84, indicator and blankout tab 86, viewing piece separating spring 88, lower viewing piece 89, lower pressure piece 90, clamping spring 92, and clamping nut 94.

Locking lever 74 is of bifurcated design having camming surfaces 96 on its prongs. It also has pivot pin holes 98 passing through its prongs, the axial line of these holes being more distant from the portions of camming surfaces 96 toward the undersides of the prongs than from those toward the left ends of the prongs. Pivot shaft 64 is threaded at its lower end, and has a rectangular head 100 at its upper end, this head having a pivot pin hole 102 and being sized to be an easy sliding fit within the prongs of locking lever 74. Pivot pin 76 is sized to be a tight fit in pin holes 98 and a turning fit in pin hole 102 or vice versa for rotatably retaining lever 74 on shaft 64.

Upper pressure piece 78 is of bifurcated design, and has a through-going rectangular hole 104 in its body portion to provide a sliding fit therein for head 100 of shaft 64. It has also vertically elongated axle pin holes 106 in its prongs. Upper surface 108 of the body portion of upper pressure piece 78 is substantially flat, and is intended to be acted against by camming surfaces 96 of locking lever 74. On the other hand, the lower surface of the upper pressure piece is curved and contoured to provide a good fit on the upper surface of upper viewing piece 84. In the actual pivot assembly, upper pressure piece 78 and upper viewing piece 84 are fixedly joined together by any suitable means. An epoxy cement would be such a means, and is assumed to be the means employed for purposes of the present description. Other means, however, such as screws or rivets could be used.

Axle pin 82 is sized to be a tight fit in axle pin hole 110 in creeper wheel 80 and a loose fit in pin holes 106. The axial length of the creeper wheel is sufficiently small that this wheel fits easily between the prongs of the upper pressure piece. The wheel itself is knurled or serrated on its circumferential surface, and is desirably of a material softer than that of upper leg member 20 so that its serrations will not score this member when they are pressed against it. Desirably also, the materials of creeper wheel 80 and upper leg member 20 are such that there is a significant coefficient of friction for one rolling on the other.

Upper viewing piece 84 is made of either clear glass or clear plastic. It has a round, downwardly extending and through-going hole 112 through which pivot shaft 64 passes and in which this shaft has a close sliding fit. The upper viewing piece also has a rectangular, longitudinally extending and through-going but locally discontinuous hole 114 through which indicator and blankout tab 86 passes and in which this tab has a close sliding fit. With the blankout tab in place within upper viewing piece 84, the lower and inner surfaces of the sub-assembly of the tab and viewing piece have a close sliding fit on and in the upper and slot surfaces of upper leg member 20 and the outer or visible surfaces of strip elements 44 and 46 fastened to this member.

Top surface 116 of upper viewing piece 84 is of curved contour to provide local magnification of the scales on strips 28 and 30. Correspondingly the outer end surfaces of the upper viewing piece, one of these being designated 118, are of curved contour to provide local magnification of the scales on strips 44 and 46. On the inner surfaces of the downwardly extending portions at either end of upper viewing piece 84 are indicator hairlines 120. These hairlines are created by grooving the viewing piece lightly with a finely pointed or edged tool and then filling the grooves with a coloring agent such as black paint. The hairlines on the upper viewing piece are used for achieving settings of the pivot assembly against the scales on strips 44 and 46.

Indicator and blankout tab 86 is made either of clear glass or clear plastic similarly to the upper viewing piece within and below which it operates. Extending centrally and longitudinally of the tab is a through-going slot 122 for the accommodation of pivot shaft 64 with a close sliding fit. Motion of the indicator and blankout tab within the upper viewing piece is limited by one end surface or the other of slot 122 coming into contact with the pivot shaft. On the lower surface of tab 86 is an intermittent indicator hairline 124 for achieving settings of the pivot assembly against the scales on strips 28 and 30. Also on the lower surface of the tab are two opaqued regions 126 near one end of slot 122 and two opaqued regions 128 near its other end, all four of these regions extending generally parallel to the scales on strips 28 and 30. On the upper surface of tab 86 at the end near opaqued regions 126 is the legend "elite," and at the end near opaqued regions 128 is the legend "pica."

For an understanding of the significance and use of

opaqued regions 126 and 128, the "elite" and "pica' legends, and indicator and blankout tab 86 generally, reference should be had at this time to the views of strips 28 and 30 given in FIGS. 1 and 3. Strip 28 carries scales for converting lengths of lines from both pica and elite typewriters to lengths in Futura Bold (ATF) type, both capitals and lower case, across a range of type sizes. Strip 30 carries scales for similar conversions to lengths in Bodoni (ATF) type. Each strip accordingly carries four scales, and on each strip the scales for conversions from lengths of lines from a pica typewriter are alternated across the strip with those for conversions from lengths of lines from an elite typewriter. It will be noted in FIGS. 1 and 3 that the indicator and blankout tab 86 is so positioned with respect to upper viewing piece 84 that the end of the tab bearing the "pica" legend extends beyond the viewing piece. With tab 86 so positioned, opaqued regions 126 and 128 thereon locally overlie or blank out the portions of strips 28 and 30 respectively which carry the scales for conversions from lengths of lines from an elite typewriter. Said in other words, with blankout tab 86 positioned as shown in FIGS. 1 and 3 only the scales on strips 28 and 30 for conversions from lengths of lines from a pica typewriter can be read against indicator hairline 124. To render the scales on strips 28 and 30 for conversions from lengths of lines from an elite typewriter readable against hairline 124, it would be necessary to push the indicator and blankout tab through upper viewing piece 84 to cause the end of the tab bearing the "elite" legend to extend beyond the viewing piece. If this were done, opaqued regions 126 and 128 would be displaced to locally overlie or blank out the portions of strips 28 and 30 respectively carrying the scales for conversions from lengths of lines from a pica typewriter. At the same time the scales for conversions from lengths of lines from an elite typewriter would be cleared of any obstruction to observation through upper viewing piece 84 and indicator and blankout tab 86 and reading against hairline 124.

Lower viewing piece 89 is made of either glass or clear plastic similarly to the upper viewing piece. It has a round, downwardly extending and through-going hole 130 through which pivot shaft 64 passes and in which this shaft has a close sliding and turning fit. The upper and inner surfaces of the lower viewing piece have a close sliding fit on and in the lower and slot surfaces of lower leg member 22 and the outer or visible surfaces of strip elements 48 and 50 fastened to this member. The bottom surface of the lower viewing piece is of curved contour, similar to that of top surface 116 of upper viewing piece 84, to provide local magnification of the scales on strips 32 and 34. Correspondingly the outer end surfaces of the lower viewing piece, one of these being designated 132, are of curved contour to provide local magnification of the scales on strips 48 and 50. On the inner surfaces of the upwardly extending portions at either end of lower viewing piece 89 and extending along the adjacent lower horizontal surfaces thereof are indicator hairlines 134 which are used for achieving settings of the pivot assembly against the scales on strips 32, 34, 48, and 50.

For purposes of simplicity of disclosure, lower viewing piece 89 has been illustrated without a longitudinal and through-going hole such as hole 114 in upper viewing piece 84 for the accommodation of an indicator and blankout tab such as tab 86. It is to be understood, however, that if needed or desired the pivot assembly of the apparatus embodiment of this invention shown in FIGS. 1 and 2 could include a lower viewing piece and an indicator and blankout tab precisely similar to upper viewing piece 84 and indicator and blankout tab 86.

Viewing piece separating spring 88 is a compression spring which surrounds a portion of pivot shaft 64; is confined laterally within slots 66 and 68 in leg members 20 and 22 with at least some degree of transverse clearance therein, and is confined at its ends in contact with the flat horizontal surfaces of the downwardly extending central portion of upper viewing piece 84 and the upwardly extending central portion of lower viewing piece 89. The tendency of force exerted by spring 88 is to push the two viewing pieces apart, and accordingly relieve any compressive force which the viewing pieces and the indicator and blankout tab may be exerting upon the upper and lower leg members.

Lower pressure piece 90 has a round and through-going hole 136 through which pivot shaft 64 passes and in which this shaft has a close sliding and turning fit. Upper surface 138 of the lower pressure piece is curved and contoured to provide a good fit on the bottom surface of lower viewing piece 89. On the other hand, the lower surface of lower pressure piece 90 is substantially flat and is intended to be borne against by or provide an upper seat for clamping spring 92 which acts in compression. In the actual pivot assembly, lower pressure piece 90 and lower viewing piece 89 are fixedly joined together by any suitable means. An epoxy cement would be such a means, and is assumed to be the means employed for purposes of the present description. Other means, however, such as screws or rivets could be used.

For purposes of simplicity of disclosure, lower pressure piece 90 has been illustrated without the prongs or bifurcations such as those forming part of upper pressure piece 78 for the accommodation of a creeper wheel such as wheel 80. It is to be understood, however, that if needed or desired the pivot assembly of the apparatus embodiment of this invention shown in FIGS. 1 and 2 could include a lower pressure piece and a creeper wheel precisely similar to upper pressure piece 78 and creeper wheel 80, except that the hole in the lower pressure piece for the accommodation of pivot shaft 64 should be kept round rather than changed to one such as hole 104 having a rectangular horizontal cross section.

Clamping nut 94 is characterized by a blind and stepped or counterbored axial hole 140. In its upper portion or portion of larger diameter, this hole accommodates at least a portion of clamping spring 92 and provides a lower seat for this spring. In its lower portion or portion of smaller diameter, this hole is tapped to be screwed onto the threaded lower end of pivot shaft 64. The clamping nut is characterized by an enlarged and peripherally knurled flange or rim portion 142 for ease of manual turning of this nut on the pivot shaft.

Clamping spring 92 which surrounds a portion of pivot shaft 64 is finished with smooth, squarely cut ends so that it can turn with respect to lower pressure piece 90 and clamping nut 94 while held under compression between this piece and this nut without gouging the surface portions of either of them whereon it is seated. The tendency of force exerted by spring 92 is to push the two pressure pieces toward each other; through them exert a compressive force on the two viewing pieces, and finally through the viewing pieces and the indicator and blankout tab clamp together the upper and lower leg members 20 and 22. In this respect spring 92 acts oppositely to spring 88, and will normally be the stiffer of the two springs.

The several conditions of clamping of the pivot assembly on leg members 20 and 22 will now be considered as these conditions are illustrated in FIGS. 4, 5, and 6. FIG. 4 which corresponds to FIGS. 1 and 2 shows the assembly in its condition of tightest clamping; FIG. 5 shows the assembly in its condition of intermediate clamping, and FIG. 6 shows the assembly in a condition of loose clamping.

In FIG. 4 it is to be noted that locking lever 74 is depressed to a horizontal position. With the lever in this attitude, pivot shaft 64 is fully raised with respect to upper pressure piece 78 on account of the action of camming surfaces 96 of the locking lever against upper surface 108 of the upper pressure piece. Raising of the pivot shaft which carries clamping nut 94 with it serves to compress clamping spring 92 against lower pressure piece 90.

In FIG. 4 it is to be noted also that the clamping nut is run up as far as possible on the threaded lower end of pivot shaft **64**. This too serves to compress clamping spring **92** against lower pressure piece **90**.

Thus it is in the showing of FIG. 4 that all possible effects combine to cause compression of the clamping spring. The force exerted by this spring, acting oppositely to and considerably overcoming that of viewing piece separating spring **88**, in turn urges the upper and lower pressure pieces together with resulting generation of a substantial force of the upper surface of lower leg member **22** against the lower surface of upper leg member **20**. This direct force exerted by the leg members against each other of course provides a high friction effect between them to resist any effort to rotate lower leg member **22** with respect to upper leg member **20** about pivot shaft **64**. A high friction effect is provided also between indicator and blankout tab **86** on the one hand and upper viewing piece **84** and upper leg member **20** on the other to resist any effort to move the tab transversely with respect to the scales on strips **28** and **30**. There may indeed be a friction effect between the tab and the strips themselves.

In the latter connection it is to be noted in FIG. 4, and also in FIGS. 5 and 6, that the visible surfaces of strips **28**, **30**, **32**, and **34** are substantially flush with the immediately adjacent surfaces of the leg members in which they are located. This arrangement allows the scales on these four strips to be read against indicator hairlines **124** and **134** without any significant care having to be taken to avoid inaccuracies on account of parallax effects. It is to be noted also in FIGS. 4, 5, and 6 that strips **28**, **30**, **32**, and **34** are each provided with a longitudinal rib on either side at the mid-thickness level. These four strips can thus be withdrawn from the grooves in the leg members wherein they are located, turned upside down, and reinserted into the same grooves. This being so, strips **28**, **30**, **32**, and **34** can each be provided with a scale or scales on both sides for maximum useful employment of their wide or non-ribbed surface areas.

In FIG. 5 it is to be noted that locking lever **74** is raised to a vertical position. With the lever in this attitude, pivot shaft **64** is fully lowered with respect to upper pressure piece **78** on account of the action of camming surfaces **96** of the locking lever against upper surface **108** of the upper pressure piece. Lowering of the pivot shaft from its position shown in FIG. 4 to that shown in FIG. 5 also lowers clamping nut **94**. Lowering of this nut allows clamping spring **92** to expand or elongate somewhat with consequent reduction in the force exerted by this spring against lower pressure piece **90**. This force is, however, still sufficiently great to hold the several elements of the pivot assembly in quite firm contact one with another against the separating force exerted by spring **88**. On the other hand, it is also sufficiently small that the force which it in turn generates of the upper surface of lower leg member **22** against the lower surface of upper leg member **20** is rather low with a consequently reduced friction effect between the leg members to resist efforts to rotate one of these members with respect to the other.

In FIG. 6 it is to be unterstood that the condition illustrated corresponds to that of FIG. 5 in that the locking lever is deemed to be raised, although this lever is not specifically illustrated, and pivot shaft **64** is in its lowered position. The difference in conditions between FIGS. 5 and 6 is that FIG. 5 shows clamping nut **94** run up on the threaded lower end of the pivot shaft as far as it can go, while FIG. 6 shows this nut considerably backed off, that is, in an appreciably lowered position with respect to pivot shaft **64** although still in threaded engagement with it. Lowering of this nut relative to the pivot shaft allows clamping spring **92** to expand or elongate even more with further reduction in the force exerted by this spring against lower pressure piece **90**.

This force is now barely great enough to hold the several elements of the copy fitting device other than nut **94** in their same relative positions shown in FIG. 5 against the separating force exerted by spring **88**. In particular, the force exerted by each viewing piece against the leg member with which it is in contact is now negligible. Consequently the friction effect provided between the viewing pieces and the leg members to resist any effort to shift the pivot assembly longitudinally with respect to the leg members is negligible also. Further unscrewing of clamping nut **94** from pivot shaft **64** would result in even greater unloading of spring **92** with resulting expansion of spring **88**, pushing apart of the upper and lower viewing pieces, and separation of the leg members from each other, or at least of one viewing piece from the leg member with which it is normally in contact.

Suppose now that readjustment of the copy fitting device of this invention in its embodiment so far described in detail is to be effected with regard to both longitudinal position of the pivot assembly and the spread between points of the leg members. Whatever the condition of adjustment of the instrument actually is, it is first of all brought into a readjustment starting condition in which the locking lever and clamping nut of the pivot assembly are respectively in raised and lowered position as described in connection with FIG. 6, and leg members **20** and **22** are in parallel alignment with alignment pin **70** seated in notch **72**. With this starting condition achieved, the first step in effecting readjustment of the device is that of shifting indicator and blankout tab **86** and if necessary, assuming that scale readings are to be taken against hairline **124**. The next step is to shift the pivot assembly as necessary to bring the hairline into at least rough coincidence with the desired graduation on whichever one of the scales on strips **28** and **30** is being used.

Fine setting of hairline **124**, and indeed of any hairline, may be obtained through use of creeper wheel **80**. Direct downward thumb pressure applied to this wheel is all transmitted thereby to the upper surface of upper leg member **20** on account of the action of axle pin **82** in elongated slots **106** in the prongs of the upper pressure piece. The creeper wheel being of or at least being rimmed with a material such as rubber will have a good friction thrust on the upper surface of the upper leg member as the user of the copy fitting device rolls the creeper wheel under a longitudinal component of thumb pressure to push or pull on the pivot assembly, and achieve a creeping motion of this assembly bringing hairline **124** to the aforementioned fine setting on the scale in use.

The next step in readjustment of the copy fitting device is to run up clamping nut **94** on pivot shaft **64** from its position shown in FIG. 6 to that shown in FIG. 5. This will cause tightening of viewing pieces **84** and **89** on leg members **20** and **22** to an extent that accidental shifting of the pivot assembly with respect to the leg members or of the indicator and blankout tab with respect to the upper viewing piece in the course of further handling of the copy fitting device is unlikely. The next step is to spread the leg members to the condition shown generally in FIG. 3, the particular angle of spread and whether it results from a distance determination between long points **52** and **60** or short points **54** and **62** depending upon the particular problem being solved. The final step is to depress locking lever **74** to its horizontal position shown in FIGS. 1, 2, 3, and 4, and thus complete the tightening of the pivot assembly on the upper and lower leg members. The shaping of the underside of the locking lever including camming surfaces **96** with respect to the line of pull exerted on this lever by pivot shaft **64** acting through pin **76** and under the influence of spring **92** is, of course, such that the horizontal position of the locking lever is a stable position, and one out of which lever **74** is intended to be moved only by manual lifting.

Referring next to FIG. 8, scale-carrying strip element **30** is shown independently of the upper leg element of the copy fitting device of this invention as so far described in detail. In the following detailed description of this

strip element and the scales which it carries, however, reference should be had as necessary to the earlier-described figures, that is, to FIGS. 1 to 7.

*Examples of use*

Two examples of use of the copy fitting device of this invention will now be given. For purposes of these examples, the copy fitting device is assumed to be of the particular structural form and to have the particular scales shown in FIGS. 1–3. The distance between the edged ends of the long and short points of either leg member of the device is assumed to be 16 inches.

*Example No. 1*

Suppose that eleven lines of double-spaced text have been prepared on a pica typewriter, and that the average line length or text width is 44 picas. Suppose further that this text is to be set in 12-point Bodoni ATF, principally lower case but with a normal occurrence of upper case (capitals) as the initial letters of sentences, personal names, and place names. It is specified that the layout copy box for the typeset material be 38 picas wide, and that 5-point line leading be used. What is to be determined is the depth of setting of the text set in type, that is, the depth or vertical dimension of the copy box.

The first step in making this determination is to bring the leg members of the copy fitting device into parallel alignment. The next step is to shift the indicator and blankout tab of the pivot assembly and the whole pivot assembly itself as necessary to bring indicator hairline **124** into visible alignment with the 12-point mark of the "pica-lc" scale on strip element **30**. This is the second scale from the bottom on strip element **30** as this element is illuminated in FIGS. 1 and 3. The next step is to spread the long points of the copy fitting device to the width of the copy box on the layout; that is, spread long points **52** and **60** to a linear separation of 38 picas. The next step is to measure the resulting linear separation of short points **54** and **62** which will be about 54 picas.

The next step is to determine the number of lines to which the typewritten text will actually set in type. This is done by calculating the average shortage or overage of each typed line with respect to the converted line length from the copy box of the layout, and then calculating the line shortage or overage for the complete typewritten text with respect to an initially assumed equal number of typewritten and typeset lines. The average length of the typewritten lines is 44 picas while the converted line length from the layout copy box is 54 picas. Accordingly there is an average shortage of 10 picas (54—44) for each typewritten line. For the complete typewritten text of eleven lines, the shortage is about two lines ($10\times11/54\approx2$). The typewritten text will, therefore, actually set to nine lines in type, this number representing the difference between the initially assumed number of typeset lines and the calculated line shortage for the complete typewritten text (11—2=9).

With the number of typeset lines known, the depth of the copy box may be calculated by multiplying the number of typeset lines (9) by the sum of the point size of the chosen type (12) and the point value of the preselected leading (5). This calculation gives a depth value of 153 points, or about 13 picas. This is the answer sought.

In place of the last-described calculation step, however, direct use may be made of the copy fitting device to finally determine the depth of the copy box. As a first thing to do this the leg members of the copy fitting device are brought into parallel alignment. Next the pivot assembly of the device is shifted as necessary to bring indicator hairline **120** into alignment with the 17-point mark of the "depth of set" scale on strip element **46**, this mark representing the sum of the point size of the chosen type and the point value of the preselected leading (12+5=17). Next the short points of the copy fitting device are spread to the depth of nine lines of the typewritten text, this depth being equal to 3 inches or 18 picas since text composed double spaced on a pica typewriter runs three lines to the vertical inch. Finally the resulting linear separation of long points **52** and **60** is measured, this separation being the depth of setting of nine lines of 12-point type with 5-point leading and is the answer sought.

It will be apparent to those skilled in the copy fitting art that certain of the foregoing-described steps can be reversed to solve the problem of how many typewritten text lines of given average length will have to be prepared for the filling of a layout copy box of predetermined width and depth when the text is to be set in a particular type face of a given size using a preselected leading.

*Example No. 2*

Suppose that a single head line (all capitals) of 28 characters including spaces has been prepared on a pica typewriter. This line has a length of 2.8 inches or 16.8 picas on the basis of ten characters per inch and six picas per inch. Suppose further that this head line is to be set in 12-point Caslon Bold ATF. What is to be determined is the length of the head line set in type.

The first step in making this determination is to bring the leg members of the copy fitting device into parallel alignment. The next step is to shift the indicator and blankout tab of the pivot assembly and the whole pivot assembly itself as necessary to bring indicator hairline **124** into visible alignment with the 12-point mark of the "pica-uc" scale on strip element **28**. This is the uppermost scale on strip element **28** as this element is illustrated in FIGS. 1 and 3. The next step is to spread the short points of the copy fitting device to the width of the head line on the typewritten page; that is, spread short points **54** and **62** to a linear separation of 16.8 picas.

The final step is to measure the resulting linear separation of long points **52** and **60** which will be about 20 picas. This measurement is the answer sought, representing as it does the length to which the head line will set in 12-point Caslon Bold ATF type, all upper case.

It will be apparent to those skilled in the copy fitting art that certain of the foregoing-described steps can be reversed to solve the problem of how long a typewritten head line will have to be prepared to occupy a predetermined length when the line is to be set in a particular type face of a given size.

*Conclusion*

Although this invention has been described with a certain degree of particularity, it is to be understood that numerous changes in the details of construction of its apparatus embodiments may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed. It is intended to secure protection by Letters Patent for this invention in all its aspects to the broadest extent that the prior art allows.

I claim as my invention:

1. In a device which has the general form of a pair of proportional dividers including (1) a first leg member having ends of a substantially pointed nature and being characterized by a through-going central and longitudinal slot, and (2) a second leg member having ends of a substantially pointed nature and being characterized by a through-going central and longitudinal slot and being of essentially the same length as said first leg member, an improved pivot assembly joining said first and second leg members, said pivot assembly comprisng (i) an upper piece in sliding contact with said first leg member on a surface thereof distant from said second leg member, (ii) a lower piece in sliding contact with said second leg member on a surface thereof distant from said first leg member, (iii) a shaft passing through and extending in either direction beyond said pivot assembly upper piece, the central slot in said first leg member, the central slot in said second leg member, and said pivot assembly lower

piece, said shaft having a close sliding fit longitudinally in said pivot assembly upper and lower pieces, a close turning fit in said pivot assembly lower piece and a free sliding fit diametrally within the central slots of said first and second leg members, and having further a non-round head on its upper end acting within said pivot assembly upper piece to prevent rotation of the shaft with respect thereto, and having still further threads on its lower end, (iv) a locking lever in pivoted engagement with the head of said pivot assembly shaft and in camming engagement with the upper surface of said pivot assembly upper piece, this engagement being of a nature that said pivot assembly shaft is drawn upwardly through said pivot assembly upper piece when the lever is depressed toward said pivot assembly upper piece, (v) a clamping nut in adjustable, threaded engagement with the lower end of said pivot assembly shaft, and (vi) a clamping spring held between said pivot assembly lower piece and said pivot assembly clamping nut, and acting through these and the other elements of said pivot assembly to clamp together said upper and lower leg members.

2. The improved pivot assembly according to claim 1 which further comprises a separating spring held between said pivot assembly upper and lower pieces, and acting to push these pieces apart.

3. In a device which has the general form of a pair of proportional dividers including (1) a first leg member having ends of a substantially pointed nature and being characterized by a through-going central and longitudinal slot, and (2) a second leg member having ends of a substantially pointed nature and being characterized by a through-going central and longitudinal slot and being of essentially the same length as said first leg member, an improved pivot assembly joining said first and second leg members, said pivot assembly comprising (i) an upper piece in sliding contact with said first leg member on a surface thereof distant from said second leg member, (ii) a lower piece in sliding contact with said second leg member on a surface thereof distant from said first leg member, (iii) a shaft passing through and extending in either direction beyond said pivot assembly upper piece, the central slot in said first leg member, the central slot in said second leg member, and said pivot assembly lower piece, said shaft having a close sliding fit longitudinally in said pivot assembly upper and lower pieces, a close turning fit in said pivot assembly lower piece, and a free sliding fit diametrally within the central slots of said first and second leg members, and having further a non-round head on its upper end acting within said pivot assembly upper piece to prevent rotation of the shaft with respect thereto, and having still further spring seating means on its lower end, (iv) a clamping spring held between said pivot assembly lower piece and the spring seating means on said pivot assembly shaft, (v) a locking lever in pivoted engagement with the head of said pivot assembly shaft and in camming engagement with the upper surface of said pivot assembly upper piece, this engagement being of a nature that said pivot assembly shaft is drawn upwardly through said pivot assembly upper piece against the force of said clamping spring when the lever is depressed toward said pivot assembly upper piece, and being further of a nature that the position of the lever as fully depressed toward said pivot assembly upper piece is a stable position.

4. In a device which has the general form of a pair of proportional dividers including (1) a first leg member having ends of a substantially pointed nature, (2) a second leg member having ends of a substantially pointed nature and being of essentially the same length as said first leg member, and (3) a pivot assembly joining said first and second leg members, said pivot assembly being shiftable at least part way between the ends of each of said leg members, the improvement which comprises a fine adjustment mechanism associated with said pivot assembly whereby precise alignment of said pivot assembly in any position along said leg members within its range of shifting with respect thereto may be provided, said mechanism including at least one creeper wheel rotatably engaged with said pivot assembly on an axis of shiftable center disposed transversely to at least a given one of said leg members, the circumferential surface of said creeper wheel being frictionally engageable under pressure with a surface of said given leg member, and said creeper wheel being relatively soft with respect to said given leg member to avoid scoring said surface thereof.

5. In a device which has the general form of a pair of proportional dividers including (1) a first leg member having ends of a substantially pointed nature and having further at least two scales visibly disposed lengthwise along it, and (2) a second leg member having ends of a substantially pointed nature and being of essentially the same length as said first leg member, an improved pivot assembly joining said first and second leg members, said pivot assembly comprising (i) an upper piece in sliding contact with said first leg member above said two scales, said upper piece being transparent to at least the extent of allowing local observation of both of said scales through it, and said upper piece being characterized by a through-going slot extending transversely to said first leg member, (ii) a lower piece in sliding contact with said second leg member, (iii) connecting means between said pivot assembly upper and lower pieces allowing said pieces and the leg members with which they are associated to be rotated relative to each other, and (iv) a tab element closely slidably fitted in the slot in said pivot assembly upper piece to be shifted between at least two positions, said tab element being generally transparent and having indicator means whereagainst said scales may be read through it and said pivot assembly upper piece and having further at least one opaqued region whereby either one of said scales may be locally covered in alternate positions of shifting of said tab element to render said scales selectively readable and unreadable against the indicator means.

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