

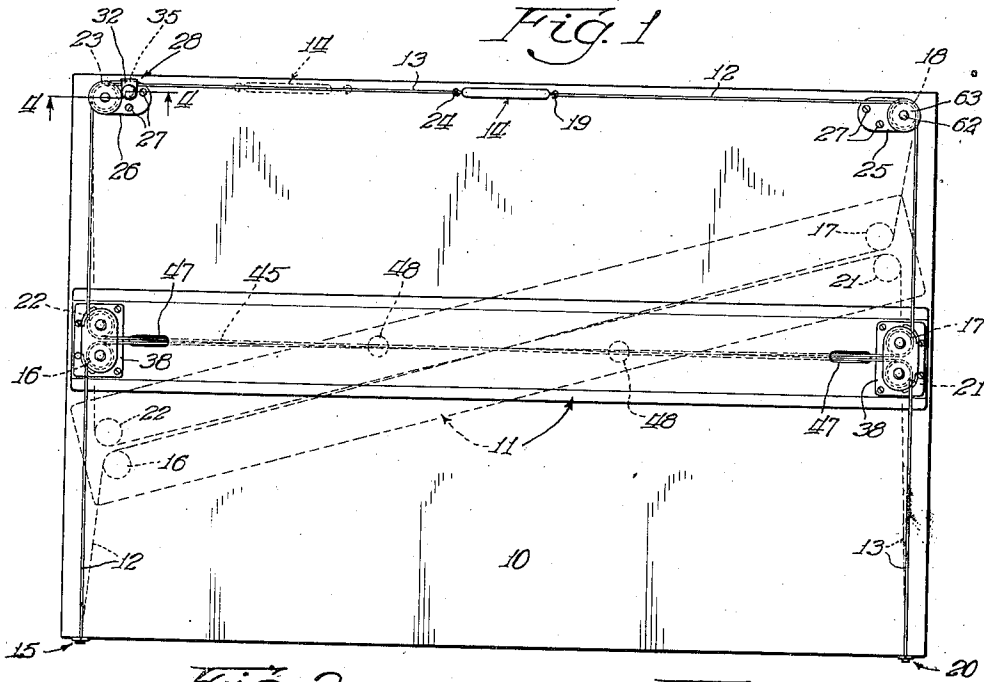
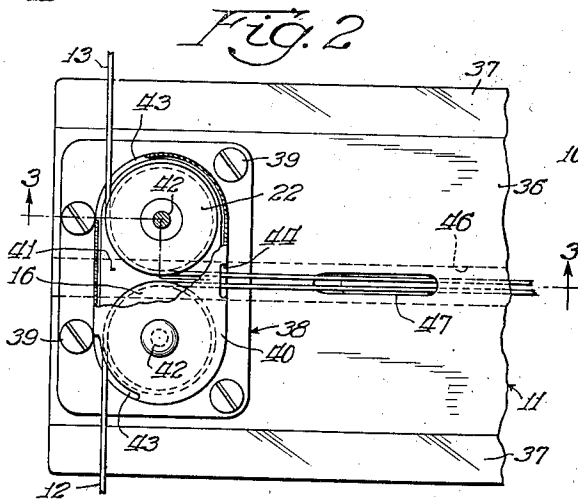
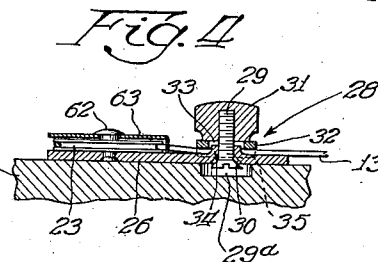
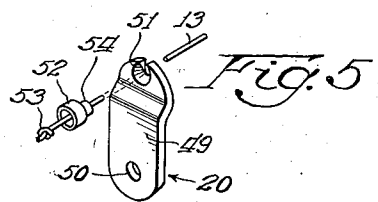
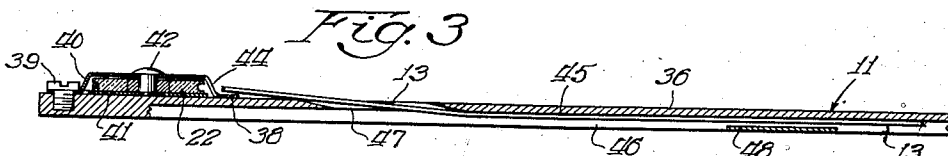
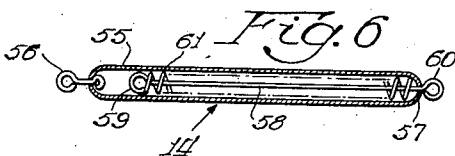
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H. L. DE LISLE

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PARALLEL STRAIGHTEDGE DEVICE

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Inventor:
Harold L. DeLisle

By: *A. Trevor Jones*

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PARALLEL STRAIGHTEDGE DEVICE

Harold L. De Lisle, Sheboygan, Wis.

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4 Claims. (Cl. 33—80)

This invention relates to parallel straightedge devices for draftsmen or the like.

Among other objects, the invention aims to provide an improved device of this character of enhanced simplicity of operation and economy of manufacture.

Other objects and advantages will be apparent from the following description, taken together with the accompanying drawing, in which—

Figure 1 is a plan view of the device showing in broken lines an alternative position of the straightedge;

Figure 2 is a partial plan enlargement of the left-hand end of the straightedge shown in Fig. 1;

Figure 3 is a section taken on the staggered line 3—3 of Fig. 2;

Figure 4 is an enlarged section taken on the line 4—4 of Fig. 1 through the cable clamp mechanism showing its associated pulley;

Figure 5 is an enlarged perspective view of one of the mounting clips with its associated cable in exploded relationship; and

Figure 6 is an enlarged axial sectional view of the spring take-up mechanism.

It is well known that there are two classes of parallel straightedge devices of this general character, one in which the straightedge is fixed to the cable and the cable and straightedge always move together, and the other in which the cable is normally fixed to the drawing board and the straightedge moves relatively to the cable, with provision for partial movement of the cable with respect to the drawing board for certain purposes while still permitting relative movement of the cable and straightedge. The present invention relates to this latter class, as will next be described by reference in detail to the illustrative construction shown in the drawing.

The drawing board 10 may be of the usual wood construction and may be the permanent top of a conventional drawing table, generally of sizes from say six to sometimes twelve feet in length, having the usual leg or other supports (not shown), the drawing paper (not shown) being superimposed upon its surface as by thumb-tacks as is well known, and lying beneath the straightedge 11 which is movable thereover for the purpose of drawing a plurality of parallel lines thereon. The straightedge 11 is guided in its movement on the board 10 by a cable which is here shown comprising two sections 12 and 13 connected along the top of the board by a spring take-up mechanism 14. The cable section 12 is held to the lower left-hand corner of the board as at 15, passes around the pulley 16 at the left-

hand end of the straightedge, then along the straightedge to the pulley 17 at the right-hand end of the straightedge, then around the pulley 18 at the upper right-hand corner of the board and to the spring take-up mechanism 14 to which it is connected as at 19. The cable section 13 similarly is held to the lower right-hand corner of the board as at 20, passes around the pulley 21 at the right-hand end of the straightedge, then along the straightedge to the pulley 22 at the left-hand end of the straightedge, then around the pulley 23 at the upper left-hand corner of the board and to the spring take-up mechanism to which it is connected as at 24. The pulleys 18 and 23 are carried by brackets 25 and 26 respectively, which may be secured to the board as by screws 27.

In accordance with the present invention, movement of the cable, except under the influence of the spring take-up 14, is inhibited by the clamp mechanism 28 so that the angular position of the straightedge with respect to the board is maintained the same in all translatable positions of the straightedge.

The clamp mechanism 28 is advantageously carried by the pulley bracket 26, and as best shown in Fig. 4, comprises a screw-stud 29 which passes upwardly through a bossed opening 30 in the bracket, this opening being screw-threaded to mesh with the screw-stud 29. A knurled thumb-piece 31 is screwed onto the upper end of the screw-stud 29, and between this thumb-piece and the bracket 26 is a clamp-piece 32, this piece having a perforation 33 through which the screw-stud 30 passes, the margin of this perforation being frictionally engaged by the thumb-piece and the perforation being of a sufficient size to receive the boss 34 of the opening 30. Thus, while the thumb-piece 31 may be unscrewed off the stud 29, rotation of the thumb-piece in the opposite direction to screw it onto the stud will, after reaching its limit, cause further common rotation of the thumb-piece and stud in the threaded bossed opening 30, and will thus press the clamp-piece 33 against the bracket 26. The outer end of the clamp-piece 33 overhangs the cable and has a lip 35 which laps the edge of the bracket 26 in tightened position clamping mechanism but freeable therefrom in released position. The board may be downwardly recessed as at 29a to receive the head of the screw-stud 29 when screwed downwardly. Thus, when the thumb-piece 31 is screwed down as described, the cable as a whole is clamped against movement relatively to the drawing board.

Further in accordance with the present invention, the straightedge 11 is made of a single flat piece 36 of material such as a phenolic condensation product or the like into which Celluloid marginal edge portions 37 may be set. Thus, the straightedge has a low flat surface without objectionable thickness or obstruction to the free movement of the hands of the draftsman. The pulley housings 38 at each end of the straightedge are readily affixed thereto as by screws 39 and are slightly upwardly turreted as at 40 to receive the pulley plate 41 upon which the pulleys 16 and 32, as a pair, or 17 and 21, as a pair, as the case may be, are secured in spaced aligned relationship as by rivets 42 which may also pass through the upper wall of the turret 40 to secure the attachment of these parts. The turret 40 advantageously is of somewhat oval shape, as is also the plate 41, to conform to the perimeters of the pulleys. The turret 40 of the pulley housing is apertured as at 43 at each end to receive the runs of the cable respectively, and is again apertured centrally as at 44 to pass the cables therethrough where the cable sections run together centrally along the straightedge as at 45 and cross each other.

Following the present invention, means are provided for passing the common runs of the cable along the straightedge as at 45 which permit the use of a single flat one layer straightedge member such as 36 while still concealing these common cable runs from view and protecting them against interference with the free and unobstructed use of the straightedge by the draftsman or from other objectionable contact. As here shown, the under face of the straightedge piece 36 is grooved lengthwise centrally as at 46, and the cables pass into this groove as they emerge from the apertures 44 through elongated slots 47 at each end of the straightedge which register with the groove 46. If desired, to more adequately maintain the cable in the groove 46, keepers such as the disks 48 of the same material as the straightedge piece 36 may be pressed into corresponding circular holes in the under face of the straightedge piece 36 flush with that face and bridging the groove 46 and the cable therein.

As best shown in Fig. 5, the ends of the cable sections may be secured to the board as at 15 and 20 by means of a clip member 49 having a screw-hole 50 in its lower end through which a screw passes into the edge of the board 10 and having at its upper end a notch 51 into which the end of the cable section 12 or 13, as the case may be, may be inserted. A ferrule 52, prevented from slipping off the cable by having the cable end knotted as at 53, has a reduced end 54 which is snugly received in the notch 51, the larger part of the ferrule by engagement with the margins of the notch resisting pull of the cable.

As best shown in Fig. 6, the spring take-up mechanism in this instance embodies a spring barrel 55 to one end of which is fixed an eyelet 56 to which one of the cable sections, in this instance the cable section 13, is attached as at 24, and the other end of which has an opening 57 in which is slidable a rod 58 having eyelets 59 and 60 at its opposite ends, the eyelet 59 being within the spring barrel 55 and the eyelet 60 on the exterior. A compression coil spring 61 is inserted by the rod 58 abutting at one end the eyelet 59 and at the opposite end the wall of the spring barrel 55 adjacent the opening 57. The cable section 12 is attached to the eyelet 60 as at 19.

As best shown in Fig. 4 also, the pulleys 23 and

18 respectively are secured to the pulley brackets 26 as by rivets 62, the rivet also maintaining over the pulley a partial housing 63 which leaves the sides thereof adjacent the edges of the board open to the free lateral entrance of the cable.

So constructed and arranged, by merely unclamping the mechanism 28 and removing the cables from the notches 51 of the clips 49, the entire cable with the straightedge 11 may be removed from the board 10 leaving the board free and unobstructed for use as an ordinary drawing board, and thereafter when the straightedge is again desired for use it may be replaced with the cable in position on the board as shown in Fig. 1, it being unnecessary at any time to disconnect the two sections of cable from each other or from the straightedge, the cable and straightedge being thus handled as a unit.

The cable may be readily placed in position by laying the straightedge on the board, anchoring one end of the cable as at 15, looping the cable around the pulleys 23 and 18 and then stretching the cable slightly to attach its other end as at 20 to the board, compressing the spring 61 slightly so that the cable is always desirably under tension when in use. The angular position of the straightedge may then be adjusted at will, for example, as shown in full lines in Fig. 1, to a position parallel with the lower edge of the board. Thereupon if this angular position is desired to be maintained as the straightedge is moved up or down on the board to draw say a series of parallel lines all parallel with the lower edge of the board, the clamping mechanism 28 is tightened to grip the cable as shown in Figs. 1 and 4, and thus movement of the cable as a whole with respect to the board is prevented. At the same time as the straightedge is moved by translatory motion toward or away from the lower edge of the drawing board, the cable and straightedge readily move relatively by reason of turning of the pulleys 16, 22, 17 and 21, and the common runs of the cable sections which pass through the straightedge move in opposite directions there-through to accommodate the position of the straightedge with respect to the cable runs at the side edges of the board, all without altering the angular relationship of the straightedge to the board. The spring 61 is of sufficient strength so as not to be compressed by normal movements of the straightedge.

When, now, it is desired to change the angle of the straightedge with respect to the board, the clamping mechanism is released and the straightedge shifted manually to the angle desired. In this operation the runs of the cable above the straightedge are moved with respect to the board, the pulleys 23 and 18 readily permitting this movement, and shifting bodily the position of the spring take-up 14 to the left or right as the case may be. For example, as shown in broken lines in Fig. 1, if the clamping mechanism 28 is released and the straightedge caused to assume an angle in which the left-hand end of the straightedge is the nearest to the lower edge of the board, the spring take-up mechanism 14 will move bodily to the left from the center position which it normally occupies, as shown in full lines in Fig. 1. In this shifted position shown in dotted lines the clamp mechanism 28 may again be tightened to so maintain the cable relatively to the board, and thereupon translatory movement of the straightedge toward or away from the lower edge of the board will be maintained at the same angle to

draw a series of parallel lines all similarly angularly related to the lower edge of the board.

As will be readily understood, if it is desired to draw parallel lines at some other angle, for example, in which the right-hand end of the straightedge is nearer the bottom of the board, the clamping mechanism is again released, the straightedge manually placed at the desired angle with its right-hand end nearer the lower edge of the board, the cable will shift bodily with respect to the board so that the spring take-up mechanism 14 will assume a position to the right of its normal central position, and the clamping mechanism 28 may be again tightened to maintain that angle.

In extreme angular position of the straightedge when the cable is shifted with respect to the board to shift the take-up mechanism bodily, there may be also some slight further compression of the spring 61 to extend the cable a trifle to permit the warping of the cable at the sides of the board from parallelism with the side edges of the board, but under moderate manipulations of the angular position of the straightedge no change in the compression of the spring 61 is necessary when the spring take-up is shifted bodily as described, the spring merely having already taken up the slack in the cable.

Such changes may be made as fall within the scope of the following claims without departing from the invention.

I claim:

1. A parallel straightedge device including a drawing board, a straightedge, a cable element comprising a pair of cable sections having their ends anchored at the lower corners of the board and crossing along said straightedge to the opposite upper corners of the board, a spring take-up mechanism connecting the ends of the cable sections wherein the spring take-up mechanism includes a spring barrel having eyelets at opposite ends thereof, one of said eyelets being fixed to the barrel and the other eyelet being on a rod movable within an opening in the end of the spring barrel, and a spring within the barrel placed under compression by outward movement of said latter rod.

2. A parallel straightedge device including a drawing board, a straightedge, a cable element comprising a pair of cable sections having their ends anchored at the lower corners of the board and crossing along said straightedge to the opposite upper corners of the board, a spring take-up mechanism connecting the ends of the cable sections, and positive means for inhibiting bodily movement of the spring take-up mechanism wherein the positive inhibiting means comprises a bracket secured to the board, a screw-stud

passing threadedly upwardly through the bracket, a knurled thumb-piece screwed on said stud, and a clamping piece between the thumb-piece and stud whereby screwing said thumb-piece upon said stud after reaching the limit of relative rotative movement of the stud and thumb-piece causes rotative movement of the stud and thumb-piece together to press the clamp piece against the bracket, and wherein the clamp piece overlies the cable and has a lip lapping the bracket edge in tightened position of the clamping mechanism but freeable therefrom in released position.

3. In a parallel straightedge device including a drawing board, a straightedge, a cable comprising a pair of cable sections having their ends anchored at the lower corners of the board and crossing along said straightedge to opposite upper corners of the board respectively, the combination therewith of pulley brackets secured to the board at said upper corners carrying pulleys about which said cable passes, the cable sections being continued toward the center of the board, a spring take-up mechanism connecting the ends of said cable sections at the top of the board proximate said center comprising a spring barrel secured to one of the cable sections and a spring enclosed in the barrel secured to the other cable section, said mechanism shifting bodily on said board with the cable as the angle of the straightedge with respect to the board is altered, and positive inhibiting means engaging the cable comprising a clamp carried by one of said brackets at the corner of the board for inhibiting shifting movement of the spring barrel and cable to maintain the straightedge in predetermined angular position while permitting relative movement of the straightedge with respect to the cable and board translatable to the latter and while permitting said spring to extend or shorten within the barrel to take up or yield slack in the cable.

4. A parallel straightedge device including an elongated relatively thin body portion having on its lower face a single relatively narrow longitudinal groove, a pulley housing carried by the straightedge at each end thereof, each housing carrying a pair of pulleys each for one of the runs of a cable associated with said straightedge and relatively movable with respect thereto around said pulleys, said pulleys being side by side in a common plane relatively close to and parallel with said body portion, apertures at the inner edges of the housings for the cable runs, a single slot near each end of the body portion for the cable runs jointly to pass from a housing into said groove, and a keeper insert pressed into the lower face of said body portion flush therewith bridging said groove to retain the cable therein.

HAROLD L. DE LISLE.