Sept. 26, 1939. L. ROTTER 2,174,137

DRAFTING IMPLEMENT

Filed Feb. 25, 1939 2 Sheets-Sheet 1

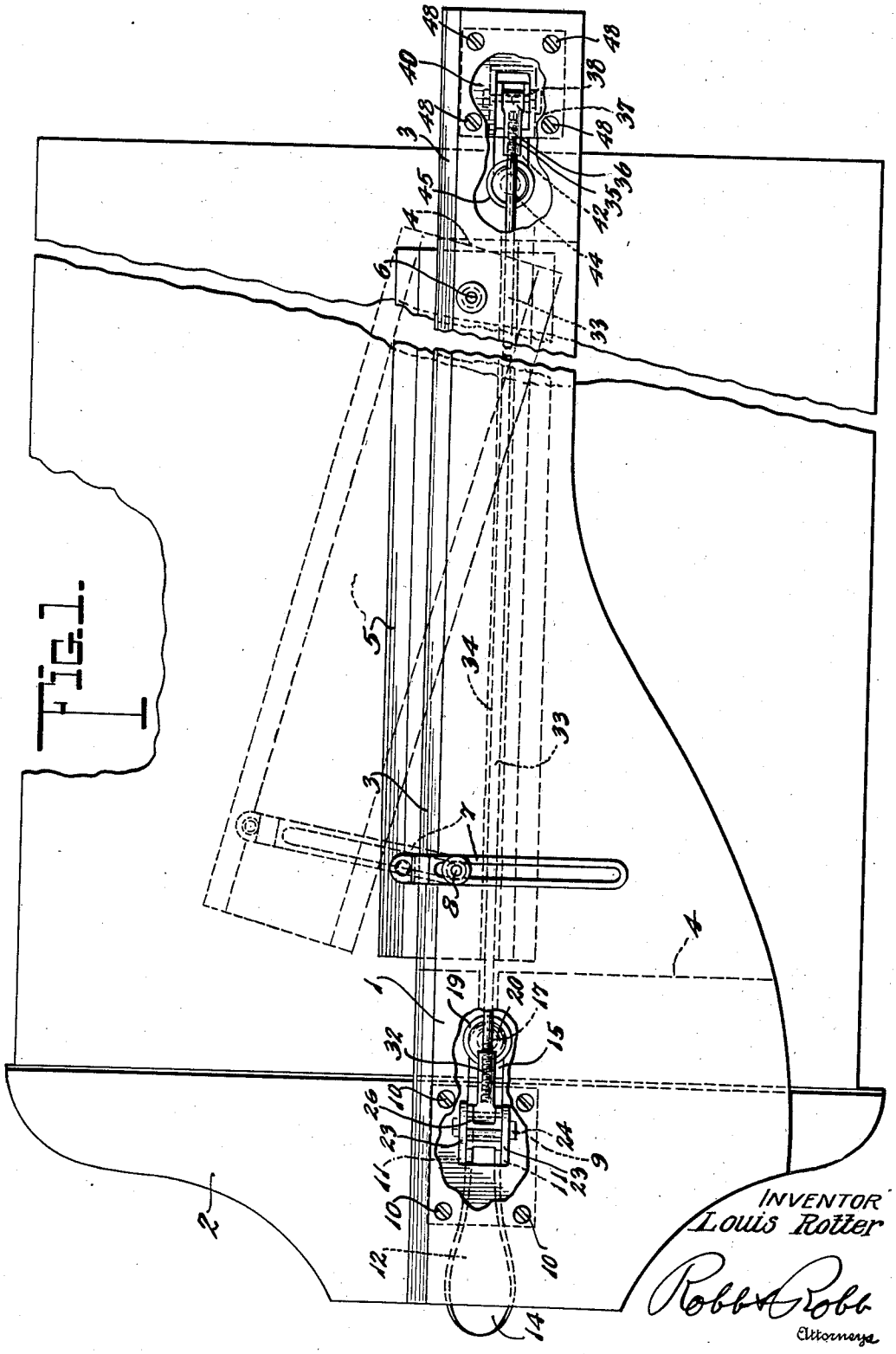


Fig. 1.

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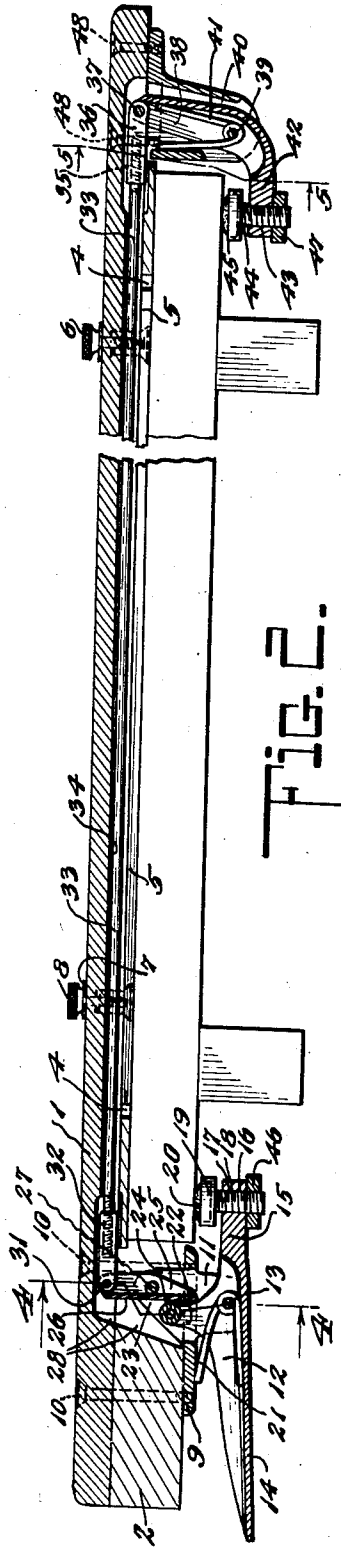


Fig. 2.

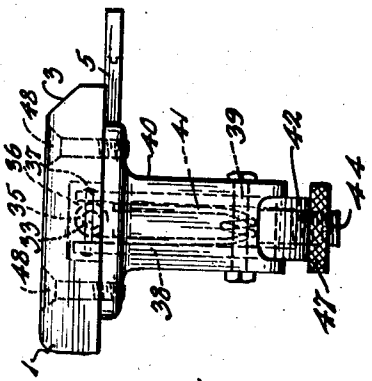


Fig. 6.

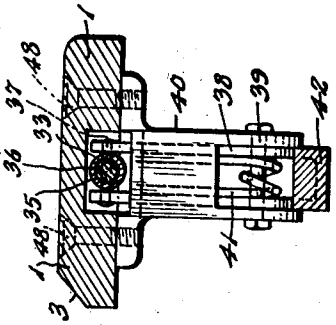


Fig. 5.

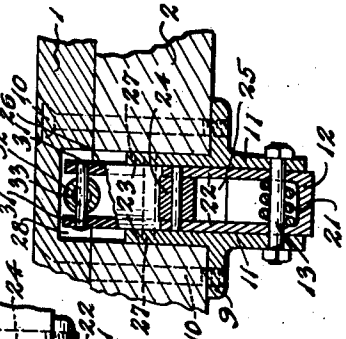


Fig. 4.

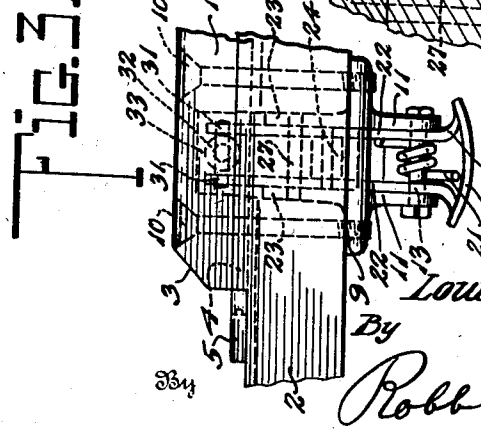


Fig. 3.

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UNITED STATES PATENT OFFICE

2,174,137

DRAFTING IMPLEMENT

Louis Rotter, Cambridge Springs, Pa.

Application February 25, 1939, Serial No. 258,476

11 Claims. (Cl. 33—80)

This invention relates to geometrical instruments of the straight edge type, and more particularly to straight edges, T squares, and the like having clamping means whereby the same may be temporarily clamped or adjustably retained on a drawing board or suitable base member when in use, and may be easily and conveniently released, shifted, and reclamped with a minimum degree of effort and inconvenience on the part of the user of the device.

Straight edges of this type are not broadly new, and certain of those that I am aware of employ the use of a single clamp on one end only. This arrangement does not adequately support the blade, especially if it is a long one, since it permits the same to flex laterally of its longitudinal direction. Also, this type requires the use of a much greater clamping pressure to prevent accidental displacement of the blade requiring considerable effort on the part of the user to release the same for adjustment over the supporting surface.

Another type is provided with clamping means arranged to engage the ends of the supporting base or drawing board which makes it necessary to use a board of predetermined length, and, due to the relatively close association of parts, the expansion and contraction of the board in different kinds of weather produces considerable difficult, inconvenience, and frequent adjustments of the clamping means. This end pressure on the board also causes additional wear to take place which is undesirable. Straight edges of this type are not held down securely on the work during their use, and, in addition, practically no angular adjustment with respect to the board is permitted.

In the double clamp type of straight edge where both clamps operate simultaneously an other disadvantage is present in that the blade must be supported throughout its entire length during its adjustment, and with the use of extremely long blades one end is likely to slip before the clamping pressure can be applied.

An object of my invention is the provision of a clamping straight edge or T square obviating all of the difficulties of the types above recited.

A further object is the provision of a straight edge having clamping means at opposite ends which are successively engageable and releasable from the supporting base by a convenient operating means located at one end of the blade.

A still further object is the provision of the clamping means just recited arranged to engage the under side of the supporting surface, whereby to exert a downward pressure on the ends of the straight edge when clamped on the support.

Another object is the use of the straight edge of the type just set forth having a head thereon for engagement with one edge of a drawing board to accurately align the blade with respect to the board with operating means conveniently located with respect to the head for releasing the clamping means during said aligning adjustment.

A further object is the provision of independent clamping means located at the opposite ends of the straight edge, one of said clamping means being arranged to release the other clamping means together with adjusting means for varying the clamping pressure.

Another object is the provision of a support-clamping straight edge of the T square type having a secondary straight edge movably positioned thereon with means for adjustably securing the secondary straight edge in adjusted positions.

Other and further objects and advantages of the invention will be hereinafter set forth and the novel features thereof defined by the appended claims.

In the accompanying drawings—

Figure 1 is a plan view of my improved straight edge illustrating its application to a drafting board, an intermediate portion thereof being broken away and the secondary straight edge shown in an adjusted position in dotted lines.

Figure 2 is a vertical, longitudinal sectional view through the device shown in Figure 1, the drafting board being shown in elevation.

Figure 3 is an enlarged, fragmentary end view of the device looking toward the end carrying the clamp operating means.

Figure 4 is an enlarged, vertical, transverse sectional view taken approximately on the plane indicated by line 4—4 of Figure 2.

Figure 5 is a similar view but taken approximately on the line 5—5 of Figure 2, and

Figure 6 is an enlarged end elevation of the righthand end of the device.

Like reference characters designate corresponding parts in the several figures of the drawings.

Referring to the drawings, 1 denotes a straight edge blade having a T square head 2 secured thereto. The blade 1 is provided with a beveled face 3 along one edge, and intermediate the ends of the blade is formed a recess 4 in which a supplemental straight edge 5 is positioned. This supplemental straight edge is pivotally secured to the main blade 1 at 6 by any suitable means, such

as the bolt and clamping nut as clearly seen in Figure 1 of the drawings. The opposite end of the supplemental blade is provided with a slotted link 7 for receiving the adjusting bolts 8 carried by the main blade 1.

By loosening the thumb nuts of the fastenings 6 and 8, the edge of the supplemental straight edge 5 may be adjusted with respect to the main blade 1, as limited by the length of the slot in the link 7. A supporting bracket 9 is suitably secured to the under side of the T square head 2 by the fastening means 10, this bracket having a pair of downwardly projecting arms 11 between which is pivotally supported, at 13, the clamping lever 12. The clamping lever 12 is formed with an operating handle 14 projecting outwardly below the head 2 and conveniently grasped by the user of the device. The opposite end of the lever 12 is formed with a friction clamp supporting arm 15 threaded at 16 to receive the drafting board friction engaging means 17, comprising a stem 18 threaded into the opening 16 having an enlarged cup-shaped head 19 in which is positioned a friction button 20 of rubber, leather or other suitable material. The lever 12 is rocked to the left to engage the member 17 with the under surface of the drafting board or other suitable support by a coil spring 21 disposed around the pivot 13. The lever 12 carries an intermediate arm 22 which extends upwardly between a pair of spaced arms 23 projecting upwardly from the supporting bracket 9, and carries at the end thereof an abutment member in the form of a roller 24 for engaging and rocking the end 25 of the lever 26. This lever 26 is pivoted at 27 between the arms 23 and projects upwardly into a cavity 28 formed in the head and blade of the device. The bifurcated extremity of the lever 26 is apertured at 31 to pivotally receive a short threaded connecting sleeve or rod 32 in which is secured one end of an actuating pull rod 33. This pull rod extends longitudinally along the under side of the straight edge 1 in a channel 34 formed for this purpose.

The opposite end of the pull rod 33 is received in a threaded socket 35 of a short connecting sleeve or rod 36, similar to the sleeve 32, this sleeve being pivoted at 37 to the extremity of the angle clamping lever 38. The clamping lever 38 is pivoted at 39 between the depending side walls of a hollow bracket 40, a coil spring 41 being disposed around the pivot pin for the lever to rock the same to the right and exert a clamping pressure on the free extremity 42 extending beneath the straight edge blade 1 and toward the other clamping member in a manner similar to the lever 12. The portion 42 of the lever 38 is threaded at 43 to receive the stem 44 of the friction member 45, which member engages the under surface of the drawing board. Lock nuts 46 and 47 are provided for the stems 18 and 44 to retain the friction buttons in their adjusted positions on the levers 12 and 38. The bracket 40 is secured to the straight edge by suitably threaded fastenings 48.

In the use of the device, the operator grasps the handle 14 moving the same toward the blade and head portions 1 and 2. Rocking of the handle disengages the friction button 20 from the lower surface of the drawing board and also causes the abutment roller 24 to impinge the lever 26 at one side of its pivot 27, rocking this lever to the left and exerting a pull on the rod 33. The rod 33 in turn rocks the lever 38 to the left, disengaging the other friction element 45 from the opposite under surface of the drawing board. The straight edge may be now adjusted both along or angularly on the board, and, when the desired adjustment is reached, the operator releases the handle 14 allowing the roller 24 to disengage the lever 25. The spring 41 rocks the lever 38 to engage the friction member with the lower surface of the board, and the spring 21 rocks the lever 12 to the engaging position. The two friction elements 15 and 45 may be independently adjusted to increase the clamping pressure on the board and also vary the time of engagement of one of the clamping members with respect to the other. For instance, by screwing out on the friction device 45 the end of the lever 25 will be moved farther away from the roller 24 so that the friction element 19 may be completely disengaged from the lower surface of the board before the roller strikes the lever 25 to cause disengagement of the friction element 45. In extremely long straight edges this is desirable, since the operator may hold one end of the blade clamped and adjust the other end to the desired position without the necessity of manually supporting the entire length of the blade against slipping during the adjustment.

Due to the fact that the clamping elements engage the under surface of the board, a considerable distance may be provided between the ends of the drawing board and the two supporting brackets 9 and 40, this space permitting a considerable degree of angular adjustment of the straight edge on the drawing board. The clamping handle 14 may be actuated and the head 2 pressed against the edge of the drawing board to position the straight edge in the usual manner as employed with T squares of the conventional type, and upon release of the handle the blade portion is drawn down tightly against the work, and there being no end engagement with respect to the board the tendency of accidental displacement during the clamping operation is reduced to a minimum.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a straight edge of the class described, an elongated blade, spaced clamping means pivotally carried thereby and engageable with a drawing board at the side opposite to the blade when the latter is disposed across one side of the board for clamping the same to the drawing board against relative movement therebetween, and common operating means for actuating each of said clamping means.

2. In a straight edge of the class described, an elongated blade, spaced clamping means carried thereby and independently adjustable relative to each other so that they may be successively operated for clamping the same to a drawing board, and operating means operatively connecting the spaced clamping means for successively actuating said clamping means to and from clamping position.

3. In a device of the class described, an elongated blade, independent pivotal clamping means therefor disposed in spaced relation to each other on the under side of the blade, and an operating connection between said clamping means for effecting release of one of said clamping means by release movement of the other clamping means, said operating connection including a pivotal lever operatively associated with each pivotal clamping means, and means for interconnecting the pivotal levers for conjoint movement.

4. In a device of the class described, a straight

edge blade, a pair of pivoted clamping levers having clamping means disposed thereon below the blade and the clamping levers extending toward each other, spring means for urging the free ends of the levers toward the blade to clamp a support at spaced points constituting means for drawing the blade toward the support, and common means for moving said levers to release position.

5. In a device of the class described, a straight edge blade, a pair of pivoted clamping levers having clamping means disposed thereon below the blade and the clamping levers extending toward each other, spring means for urging the free ends of the levers toward the blade to clamp a support at spaced points constituting means for drawing the blade toward the support, means for releasably rocking one of said clamping levers away from said blade, and impingement means connected to the other clamping lever engageable by the first lever to rock the recond clamping lever to release position.

6. In a device of the class described, a straight edge blade having a head thereon for engagement with the edge of a drafting board, a pair of clamping levers disposed on the under side of the blade for clamping engagement with the under side of the drafting board at spaced points, release means for rocking one of said levers away from the under side of the blade and the lower surface of the drafting board, release means for the other clamping lever operable by the first lever to rock said second lever away from the blade to disengage the same, and separate spring means for rocking the levers toward the blade in their clamping movement.

7. In a device of the class described, a straight edge blade having a head thereon, separate clamping means disposed on the under side of the blade for movement toward the blade, separate spring means for urging the clamping members toward the blade, release means on one of said clamping members disposed beneath the blade and head for moving both of said clamping members to release position, and adjusting means on said clamping members for varying the clamping action.

8. In a device of the class described, an elongated blade member, a pair of supporting brackets depending downwardly from the opposite end portions of the blade, a manually releasable clamping lever journalled in one of said brackets, a cooperating release lever in said bracket, a second clamping lever mounted in the other bracket, said clamping levers having clamping arms extending toward each other and said release lever being disposed in the path of movement of said manually operable clamping lever to be actuated thereby, means for exerting a clamping pressure on said levers, and an operating connection between said release lever and the second-mentioned clamping lever.

9. In a device of the class described, a straight edge blade adapted to extend beyond the edges of a drawing board, a manually operable pivotal clamping lever disposed adjacent one end of the board and having a movable clamping arm projecting away from the end of the blade to engage the under surface of the board responsive to pivotal movement of the clamping lever, a second clamping lever movably secured to the opposite end portion of the blade and projecting away from said end to engage the under surface of the drawing board, and an operating connection between said clamping levers whereby one is operated by the other.

10. In a device of the class described, a blade, a pair of clamping levers movably secured to the blade and movable toward the blade to clamp a supporting surface between the blade and said levers, resilient means for independently urging said levers to clamping position, and an operating connection between said levers whereby one is actuated by the other.

11. In a device of the class described, a blade, a pair of clamping levers movably secured to the blade and movable toward the blade to clamp a supporting surface between the blade and said levers, resilient means for independently urging said levers to clamping position, and a one-way operating connection between said levers whereby one is actuated by the other in one direction only.

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