Sept. 13, 1927. 1,642,232

L. E. EDWARDS

MAGNETIC T-SQUARE

Filed Nov. 18, 1924 2 Sheets-Sheet 1

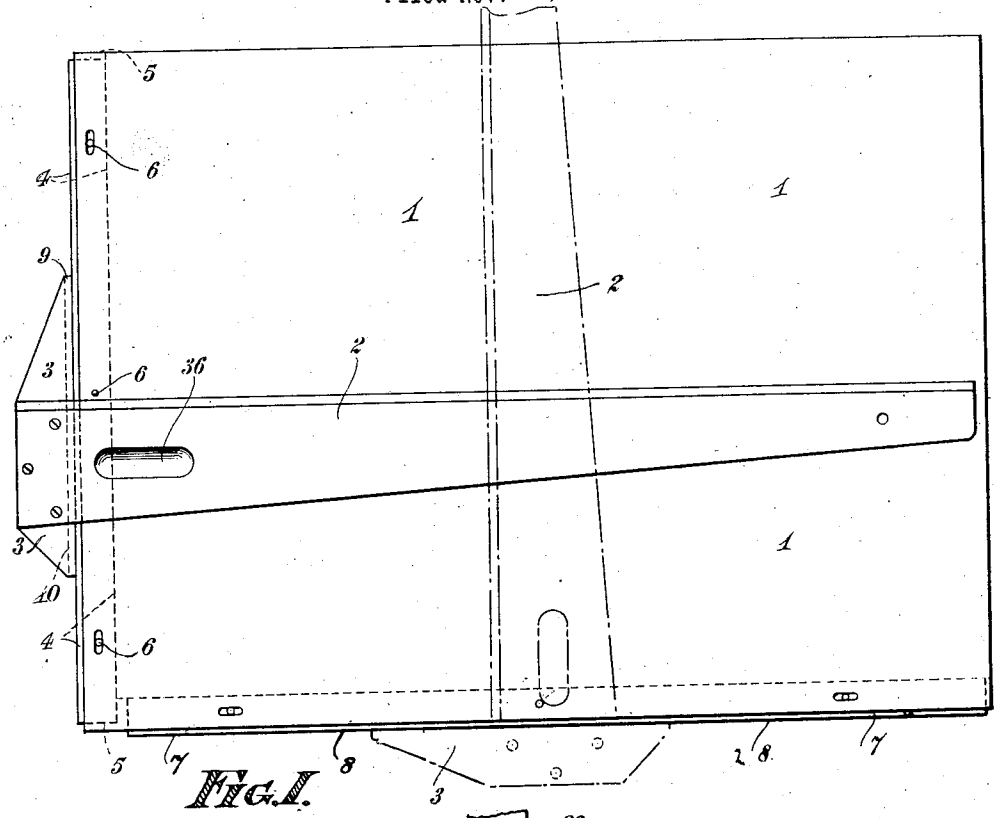
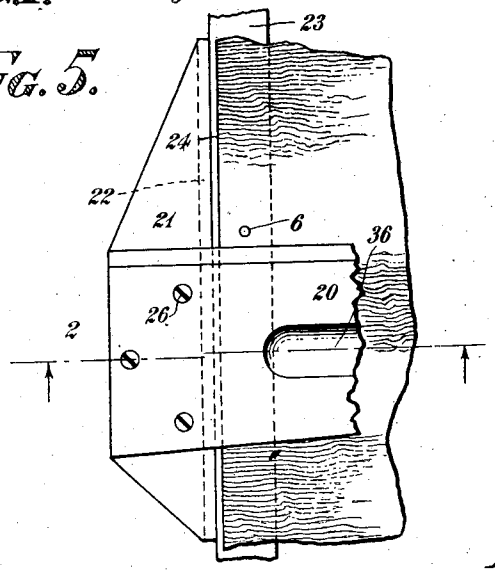


FIG. 1.

FIG. 5.



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FIG. 4.

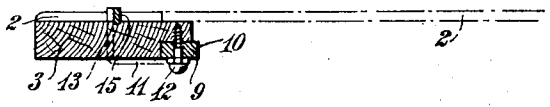


FIG. 2.

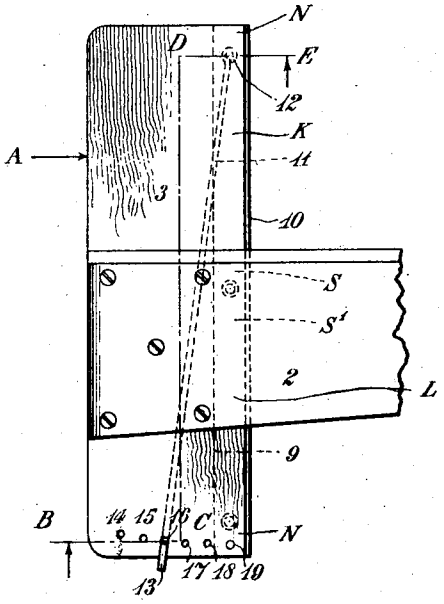


FIG. 3.

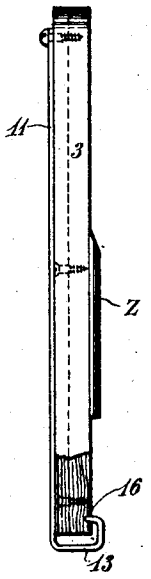


FIG. 6.

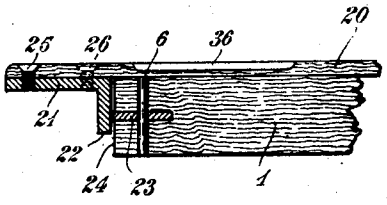


FIG. 8.

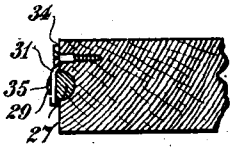
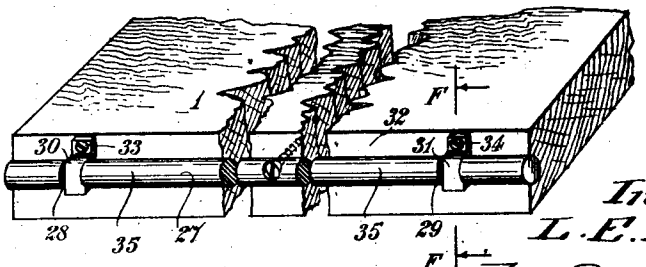


FIG. 7.



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Patented Sept. 13, 1927.

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UNITED STATES PATENT OFFICE.

LINDSAY ERNEST EDWARDS, OF TUNBRIDGE WELLS, ENGLAND.

MAGNETIC T-SQUARE.

Application filed November 18, 1924, Serial No. 750,682, and in Great Britain December 1, 1923.

This invention relates to engineers' and architects' drawing boards and T-squares, and has for its object to provide means whereby the head or stock of the T-square is kept in contact with the edge of the board. The said means, although not being a constructional interengagement of parts (e. g. groove on board engaged by a tongue or clamping device on T-square) nevertheless maintains the two members in their proper relative position as against normal forces, permits of free sliding movement without need for unclamping any part, and automatically pulls up the T-square to its proper engagement should it by chance become displaced.

In one feature of the present invention the permanent magnet or magnets referred to above is or are each of the form having consequent poles, i. e. each having more than two magnetic poles. A further feature of the invention is the provision of improved means whereby the magnetic action interacting between the permanent magnet or permanent magnets and the magnetic or magnetizable strip may be varied as desired.

A further feature of the invention is the provision of improved means whereby the permanent magnet or permanent magnets, the magnetic or magnetizable strip or strips or other desired material may be attached to either the T-square or the like or to the drawing board. The means employed for attaching the permanent magnet or permanent magnets or the magnetic or magnetizable strip or strips may also be used for attaching the ebony, vulcanite, boxwood or like strip which is usually inserted into the edge of a drawing board.

In order that the invention may be clearly understood and readily carried into effect, reference is made to the accompanying drawings which shew, by way of example, constructions and arrangements of T-squares drawing boards and a straight edge in accordance with the present invention.

Figure 1 is a plan of a drawing board and T-square assembled in normal position, the T-square being shewn in dotted lines in a second position.

Figure 2, drawn to an enlarged scale, is a plan of a T-square head or stock and part of the blade.

Figure 3 is a rear end view partly in section of the T-square looking in the direction of the arrow A, Figure 2.

Figure 4 is a combined cross sectional view on the line B—C—D—E, Figure 2.

Figure 5, drawn to an enlarged scale, is a plan view of a straight edge converted into a magnetic T-square in accordance with the present invention.

Figure 6, drawn to an enlarged scale, is a sectional elevation edgewise of the straight edge so as to shew the method of attachment of a head or stock to the said straight edge and its relationship with the respective co-operating edge of a drawing board.

Figure 7, drawn to an enlarged scale, is a perspective view of one edge of a drawing board shewing the method of attachment of a member thereto.

Figure 8 is a cross section on the line F—F, Figure 7.

Referring to Figure 1, the drawing board is indicated at 1, the blade of the T-square at 2 and the head or stock of the T-square at 3. The edge of the drawing board is provided with a strip 4 of magnetic material which is let into a recess 5 in the edge of the drawing board, the said strip of magnetic material being positively retained in position in the recess in the drawing board edge by pins 6 or other suitable means. If so desired the edge 7 of the drawing board may be fitted with a strip 8 similar to the strip 4. The head or stock 3 of the T-square is provided with a recess 9 on its working edge and a permanent magnet 10 is suitably secured therein. The permanent magnet may be magnetized in a manner so as to have more than two magnetic poles, that is, it will have consequent poles. In this manner a more uniform and even co-operating magnetic action with the strip 4 in the adjacent edge of the drawing board will be obtained. Moreover, the permanent magnet 10 need not be of equal cross sectional area throughout its length, preferably it will have its greatest cross sectional area midway between mag-

netic poles of opposite polarity, for example, at or near the points marked K and L on Figure 2. From a maximum cross sectional area at or near these points the cross sectional area may, in order to obtain maximum magnetic efficiency in the magnet be gradually reduced towards adjacent magnetic poles at a rate which may be calculated. If so desired the strip 4 at the edge of the drawing board may itself be a permanent magnet and the co-operating part of the T-square may then be of magnetic material. It should be clearly understood, however, that if desired the strip in the edge of the drawing board and the co-operating strip in the working edge of the T-square may both be permanent magnets. As shewn in Figure 4 the recess 9 is of a rectangular nature and is formed in the under side of the stock or head 3 of the T-square. If desired, however, the said recess 9 may be of any shape and of such a nature as to enclose or embrace the permanent magnet on more than two sides. The poles of the permanent magnet are indicated by the letters N. S. S_1, N_1, as shewn in Figure 2. (S & S_1 are consequent poles).

In order to vary the magnetic action of the permanent magnet the T-square is fitted on its under side with a radius rod 11 partly or wholly of magnetic material which is pivotally connected to the head or stock of the T-square as at 12 and is provided at its opposite end with a hook 13, the said hook being adapted to engage in any of a number of recesses 14, 15, 16, 17, 18 and 19, Figure 2. The radius rod 11 can thus be displaced relatively to the permanent magnet 10 and thus vary the magnetic action thereof. Obviously, alternatively to using a rod such as the radius rod 11 for varying the magnetic action, the magnet 10 may be displaceable in its recess, or the co-operating magnetic member 4 on the edge of the drawing board may be displaceable, or actual contact between the magnet and the co-operating member on the board may be prevented by the interposition therebetween of any material.

In Figures 5 and 6 a straight edge 20 is shewn having applied thereto a head or stock 21 in the form of a permanent magnet. For convenience the magnet 21 is provided with a downwardly projecting flange 22 to cooperate with a strip 23 of magnetic material let into the edge 24 of the drawing board 1. As in Figure 1, the strip 23 is shewn as being retained in position in its recess by pins 6. The permanent magnet 21 may be of the contour shewn or may be of any other desired contour. The permanent magnet 21 constituting the stock or head to the straight edge 20 is magnetized either in the ordinary manner, that is, so as to have two magnetic poles, or in such manner as to have consequent poles in order to obtain a more uniform and even magnetic action between the magnet 21 and the strip of magnetic material 23. The magnet 21 is detachably connected to the straight edge by screws 25, 26 or by other suitable means and may be pivotally connected by any ordinary means if desired. The straight edge may be of xylonite, celluloid, ebony, wood or other suitable material. The member 23 may itself be a permanent magnet in which case the member 21 may be of any suitable magnetic material. Further, both members 21 and 23 may be permanent magnets having their contacting edges magnetic poles of opposite polarity.

Figures 7 and 8 shew a means for securing a member to the edge of a drawing board or, if so desired, to the head or stock of a T-square. Assume, for the purposes of the present description that such material is a strip of magnetic material which is represented by 27 in Figures 7 and 8. It will be seen that the strip, which, in this case is shewn as of solid cylindrical shape, is recessed as at 28, 29. Clips 30, 31 of which two are shewn but of which there may be any desired number, are rigidly but detachably secured to the face 32 of the drawing board as shewn at 33, 34 by screws or other suitable means. This arrangement permits of the head or stock of a T-square being manipulated along the face 35 of the strip 27 without any interruption to the movement thereof by the clips 30, 31 and at the same time it permits of the removal of the strip 27 and the substitution therefor of a strip of any desired nature or form such as a piece of vulcanite, ebony or wood. In view of the magnetic action between the T-square and drawing board it is desirable, although not essential, that some means should be provided whereby the T-square may be easily and readily manipulated over the face of the drawing board. For this purpose the T-square may be provided with a recess 36 to receive the fingers and by means of which the T-square may be easily manipulated across the face of the board 1. If so desired, however, instead of the recess 36 a projecting member may be attached to the T-square somewhat in a similar position to the position of the recess 36 and the T-square may then be manipulated thereby.

What I claim is:—

1. In a T-square, a head, and a permanent bar magnet secured thereto having consequent poles along one face thereof, said face forming the surface of said head adapted for engagement with the edge of a drawing board, the said edge being of magnetizable material.

2. In a T-square, a head, and a permanent bar magnet of varying cross sectional area and having consequent poles along one face, such magnet being secured to the head to

permit said face to engage with the edge of a drawing board, the said edge being of magnetizable material.

3. In a T-square, a head, a permanent bar magnet removably secured thereto and having consequent poles along one face thereof said permanent bar magnet forming the means for holding the T-square in proper relation to a drawing board through an edge of the latter of magnetizable material.

In testimony whereof I have hereunto signed my name.

LINDSAY ERNEST EDWARDS.