June 30, 1931. C. A. GREEN 1,812,477

DRAWING BOARD ATTACHMENT

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Fig. 1

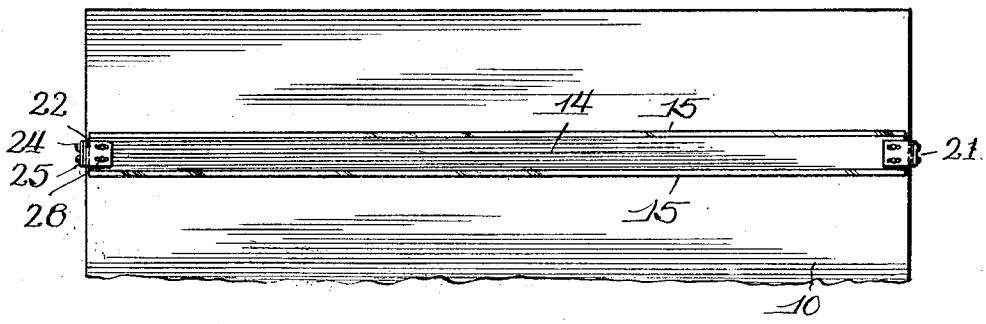


Fig. 2

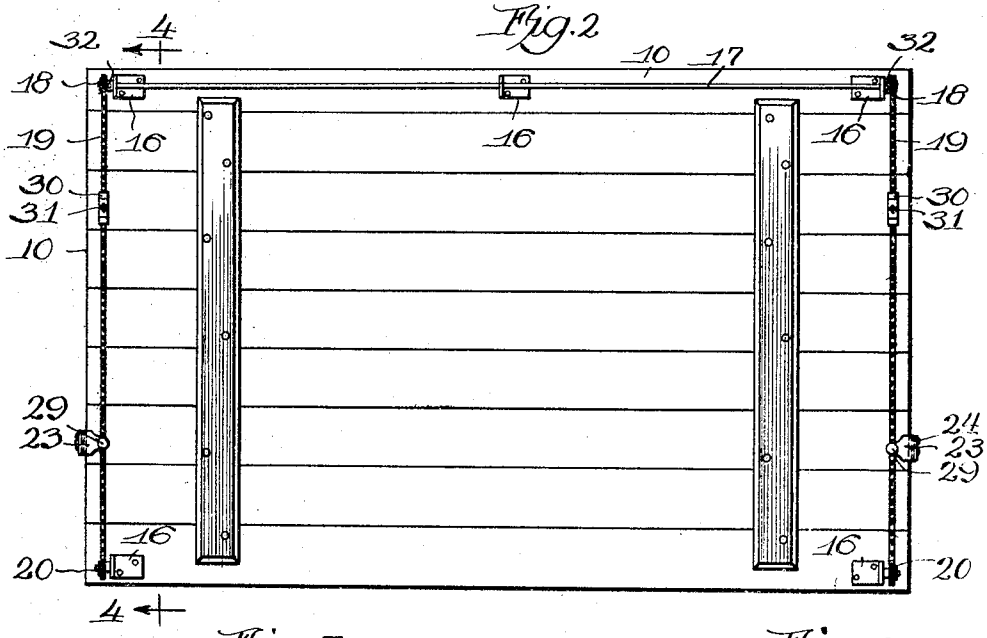


Fig. 5

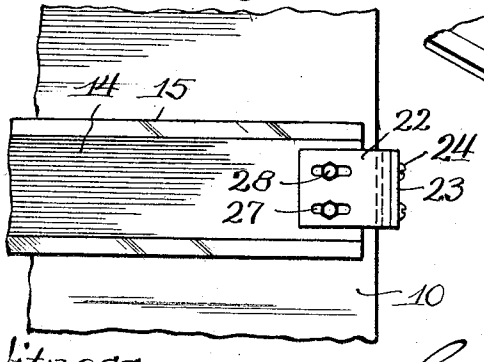
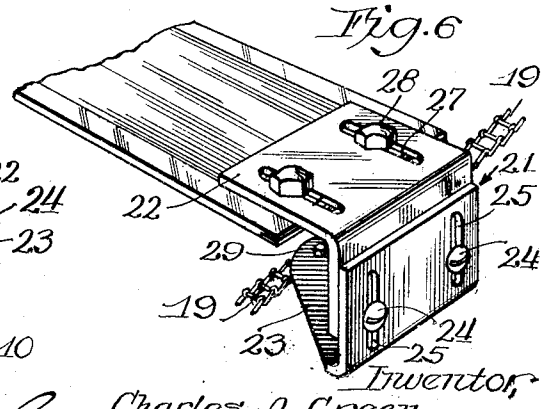


Fig. 6



Witness:
Chas. R. Thursh.

Inventor,
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Fig. 3

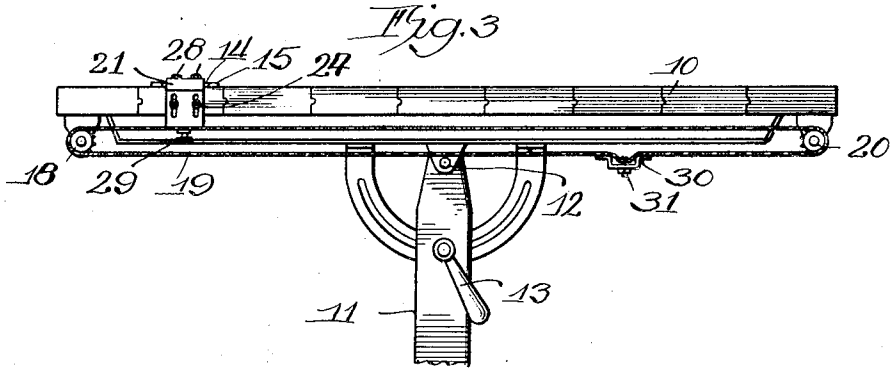


Fig. 4

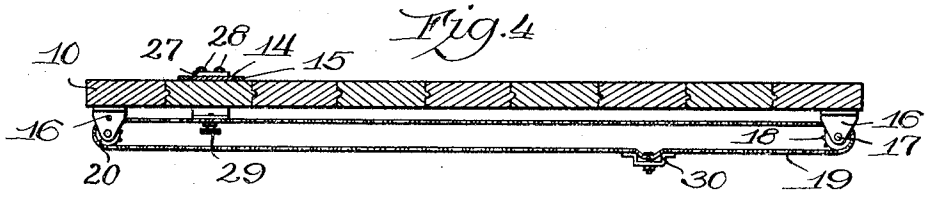


Fig. 7

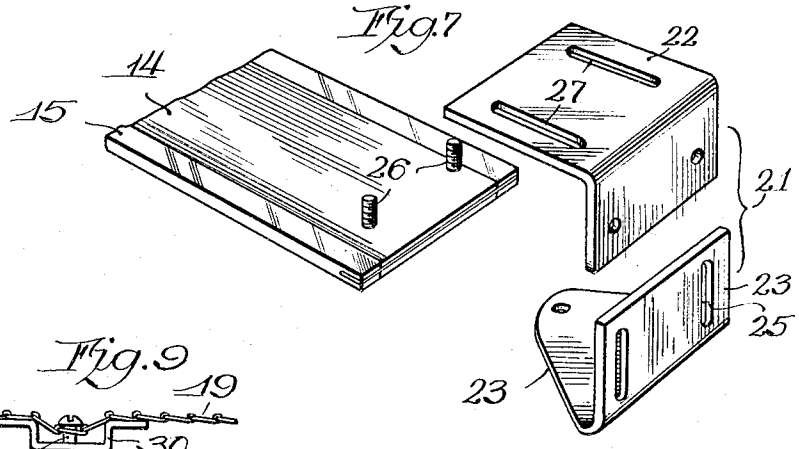


Fig. 9

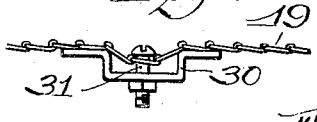
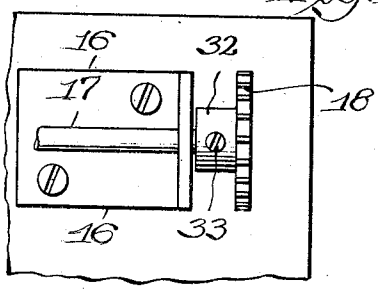
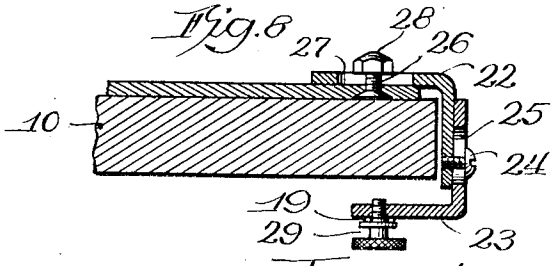


Fig. 10



Witness:
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Fig. 8



Inventor,
Charles A. Green,
George Sugarman Jones Attys

Patented June 30, 1931 1,812,477

UNITED STATES PATENT OFFICE

CHARLES A. GREEN, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO C. F. PEASE COMPANY, A CORPORATION OF DELAWARE

DRAWING BOARD ATTACHMENT

Application filed April 9, 1927. Serial No. 182,454.

This invention relates to improvements in drawing board attachments for insuring movement of a ruler or "straight edge" back and forth across a rectangular drawing board to positions which are always parallel to the front and rear edges thereof, such devices being commonly known as "parallel rule attachments".

Devices have been constructed heretofore for insuring parallel movement of the ruler or straight edge back and forth over the drawing board, but various objections to them have developed in practice. In one form of commercial device, the parallel movement is effected by a cord or cords attached to the ends of the ruler and passing around pulleys and from one side of the drawing board to the other. Some of these cords stretch more than others in use, thereby destroying the parallel arrangement.

In the case of some devices, the ruler is longer than the board and projects considerably beyond both ends to enable said ends to be attached to the device for insuring parallel movement. For example, the cord actuated arrangement referred to embodies this feature. With this arrangement any one walking past the sides of the drawing board on which a draftsman is working is likely to brush against the projecting end of the ruler and cause disfigurement of the drawing, especially if the same is being inked at the time.

In other cases, the ruler is connected to a shaft which extends across the top of the drawing board and is secured to chains at its ends, or said shaft may carry pinions which run or racks mounted on each side of the drawing board. In the first instance the shaft above the drawing board forms an obstruction, and in the second instance, the wood warps in time so that the pinions either bind in the racks or are lifted a little, and thereby provide too much clearance or backlash, both of which are objectionable.

The object of the present invention is to obviate these difficulties and inconveniences by providing means for insuring parallel movement of the ruler, without requiring the latter to project materially beyond the sides of the drawing board, the mechanism itself being located beneath said board and connected to the ends of the ruler by small inconspicuous clamping members which pass around opposite sides of the board very close thereto, with only a slight clearance to prevent friction, whereby the danger of accidentally moving one end or the other of said ruler is greatly minimized.

A further object is to provide an arrangement of this character by which the movement is positive and accurate so that the ruler always remains exactly parallel to any of its other positions on the drawing board, and whereby the movement thereof may be effected equally well, whether the ruler is grasped at one end or the other, or in the middle.

An additional object is to provide means whereby the ruler may be readily removed from its clamping members to permit it to be cleaned, particularly on the underside thereof.

In the accompanying drawings, I have illustrated one embodiment of the invention which will serve to illustrate its advantages. Other embodiments, however, are contemplated.

Figure 1 is a plan view of part of a drawing board.

Fig. 2 is a bottom view thereof.

Fig. 3 is a side view thereof.

Fig. 4 is a section on line 4—4, Fig. 2.

Fig. 5 is a plan of one end of the ruler and clamping member on a larger scale.

Fig. 6 is a perspective view thereof.

Fig. 7 is a further perspective view, with the parts disconnected.

Fig. 8 is an enlarged sectional elevation through one end of the ruler and drawing board.

Fig. 9 is an enlarged side elevation of a chain tensioning device, and

Fig. 10 is an enlarged fragmentary view of one of the sprocket wheels and associated parts.

The drawing board 10 may be of any suitable material, and is shown as of the conventional rectangular outline. It is supported on a suitable standard which may comprise a

pair of metal uprights 11 pivoted to the under part of the drawing board, at 12, and provided with an adjustable clamping device 13, whereby the drawing board may be inclined or swung to nearly vertical position when not in use.

A ruler 14, or straight edge, extends across the drawing board 10 approximately from one side to the other. It is desirable that it should not project materially beyond the sides of the drawing board, and it is preferably somewhat shorter than the length of said drawing board, from side to side, as shown in Fig. 1. Its opposite edges may be formed of celluloid strips 15, as is usual in such cases.

A plurality of brackets 16 are mounted on the underside of the drawing board and support a rotatable shaft 17 having a sprocket wheel 18 at each end thereof. Two endless chains 19 pass over these sprocket wheels and also pass over second sprocket wheels 20, supported on similar brackets, the two chains being substantially parallel and arranged beneath the drawing board not far from the opposite sides thereof. The rotatable shaft 17 is preferably mounted near the rear edge of the drawing board; that is, the one farthest removed from the draftsman, so as to avoid any obstruction at the front edge or accidental contact which might rotate the shaft.

The ends of the ruler are connected with the chains by two brackets 21 of generally U-shaped form, composed of two angle members 22 and 23 which overlap each other and are adjustably secured by any suitable clamping device, such for example as screws 24 which are mounted in one of the members and pass through a pair of slots 25 in the other member, as shown in Figs. 7 and 8. Suitable clamping devices also secure each end of the ruler to the corresponding angular member 22. For example, short screws 26 may pass upwardly through the ruler and through slots 27 and be engaged by ornamental metal nuts 28.

The upper leg of the U-shaped member is thus adjustably secured to the ruler to adapt the device to rulers of different lengths, and the upper and lower legs are adjustably connected to adapt the device to drawing boards of different thicknesses, the bottom leg carrying a knurled clamping nut 29 which passes through one of the links of the chain 19 and thus secures the ruler to said chain to cause the former to move with the latter.

A further function of the bolts 26 and nuts 28 is to permit ready removal of the ruler whereby the latter may be cleaned, particularly the under surface thereof which slides over the drawing paper.

With the arrangement described, it will be seen when the ruler is moved from front to rear across the drawing board, or vice versa, the chains are caused to travel on their supporting sprocket wheels, and two of said wheels being directly connected by a transverse shaft, the two ends of said ruler will travel the same amount. In other words, the ruler in any position is always parallel to any of its other positions, and it may be moved from one position to the other by grasping it at any point throughout its length without disturbing this parallel arrangement; that is to say its movement will be just as accurate if grasped at one end as if it were grasped at the other end or in the middle.

In order to take up any initial slack in the chain, or in order to maintain said chain tight in use under varying temperature conditions, a tightening device 30 (Fig. 9) is employed, consisting of a U-shaped piece of metal having a small bolt 31 secured to it and passing through one of the links of the chain to cause an offset in the latter and thus tighten it any desired degree. One of these devices is preferably secured to each chain and at a point in the span corresponding to the bracket connected to the opposite span, as shown in Fig. 4, so that the said tightening device will not interfere with the free movement of the ruler all the way across the drawing board.

It will also be seen that the U-shaped brackets at the ends of the ruler fit fairly closely over the sides of the drawing board, allowing only a small clearance, sufficient to avoid actual contact, and, hence, friction. In other words, they project the minimum amount and therefore there is little danger of their catching in the clothing of the persons walking past the drawing board. Furthermore, the chains being made of metal do not stretch with continued use as where cords are used, and any variations in the length of said chains, due to temperature variations take place uniformly in both chains so that the parallel arrangement is not disturbed, particularly if any slack is taken up by means of the devices described.

When the attachment is assembled initially on the drawing board, it is desirable to adjust one chain with reference to the other so as to bring the ruler parallel to one of the edges of the drawing board, for example, the front edge. For this purpose, one or both of the sprocket wheels 18 on the shaft 17, as shown in Fig. 10, have hubs 32 carrying setscrews 33, whereby either sprocket wheel may be rotated about the shaft 17 and clamped in any desired position to insure the necessary parallel arrangement.

The equipment described may be sold either in the form of an attachment to apply to a drawing board already in use, or it may be mounted thereon initially as part of the standard equipment. The arrangement of chains and shaft is such as to provide for movement of the ruler back and forth from front to rear of the drawing board in the

manner customarily desired, although obviously the various parts may be otherwise mounted to provide for a parallel movement back and forth from one side of the drawing board to the other, if desired. Various other changes may be made in the parts described, which are referred to in detail merely to illustrate a commercial embodiment of the invention.

What I claim as new is:

1. The combination with a drawing board, of a ruler extending substantially from one edge to the other thereof, a shaft mounted beneath said board and terminating short of said edges, a pair of sprocket wheels one on each end, secured to said shaft, a second pair of sprocket wheels mounted beneath said board with their axes of rotation parallel to said shaft and each alined with one of said first mentioned sprocket wheels, a chain passing over each pair of alined sprocket wheels, and means engaging the ends of said ruler inwardly of the adjacent edges of said board and extending around said edges into engagement with said chains for causing movement of said ruler on said drawing board to positions which are always parallel to each other.

2. The combination with a drawing board, of a ruler extending nearly across the same but terminating short of the opposite edges thereof, means secured to the ends of said ruler extending around the edges of said drawing board and beneath the same, with only a slight clearance so as to project beyond said drawing board a minimum amount, and means beneath said drawing board secured to said first means for insuring parallel movement of said ruler.

3. The combination with a drawing board, of a ruler extending substantially from one edge to the other thereof, and adjustable brackets secured to the ends of said ruler extending around the edges of said drawing board, and terminating beneath the same, with only a slight clearance at said edges.

4. The combination with a drawing board, of a ruler extending nearly across the same but terminating short of the opposite edges thereof, means secured to the ends of said ruler extending around the edges of said drawing board and beneath the same, with only a slight clearance so as to project beyond said drawing board a minimum amount, and means beneath said drawing board secured to said first means for insuring parallel movement of said ruler, said first means being adjustable horizontally and vertically to provide for rulers of different lengths and for drawing boards of different thicknesses.

5. The combination with a drawing board having a ruler arranged thereon parallel to the front and rear edges thereof, of a two-part adjustable bracket secured to each end of said ruler and extending over the edges of said drawing board and beneath the same, a chain beneath each edge of said drawing board to which said brackets are secured, sprocket wheels supporting each chain, and means connecting said sprocket wheels for insuring equal movement of said chains to maintain said ruler parallel to said front and rear edges in any position to which it may be moved.

6. In a device of the class described, a ruler, a two-part bracket for each end thereof forming a U-shaped structure, the upper leg of said U-structure having slots therein, means secured to said ruler and passing through said slots to adjustably clamp the bracket to the ruler, the two parts of the base of said U-structure overlapping each other, one of said parts being slotted and receiving a clamping device secured to the other part, whereby the distance between the upper and lower legs may be varied, and means on said bottom leg for engaging a device beneath said drawing board for insuring the same movement of opposite ends of said ruler.

7. In a device of the class described, a drawing board, a ruler extending substantially across the same, two pairs of alined sprocket wheels secured beneath said drawing board and between the planes of the edges of said drawing board, an endless chain passing over each pair of sprocket wheels and substantially parallel to the opposite edges of said board, and a thin flat member extending from each chain around one of said edges and removably secured to an end of said ruler.

8. The combination with a drawing board of a ruler movable over the upper surface thereof, a pair of brackets, each having a flat inwardly extending portion secured to a face of said ruler, and an intermediate portion extending downwardly adjacent the edge of said board and having its lower end projecting inwardly beneath said board, and means beneath said board to which said lower ends of said brackets are secured for holding said ruler in positions of parallelism as it is moved over said board.

In testimony whereof, I have subscribed my name.

CHARLES A. GREEN.