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W. H. FLETCHER.

BLACKBOARD RULER.

(Application filed May 24, 1900.)

(No Model.)

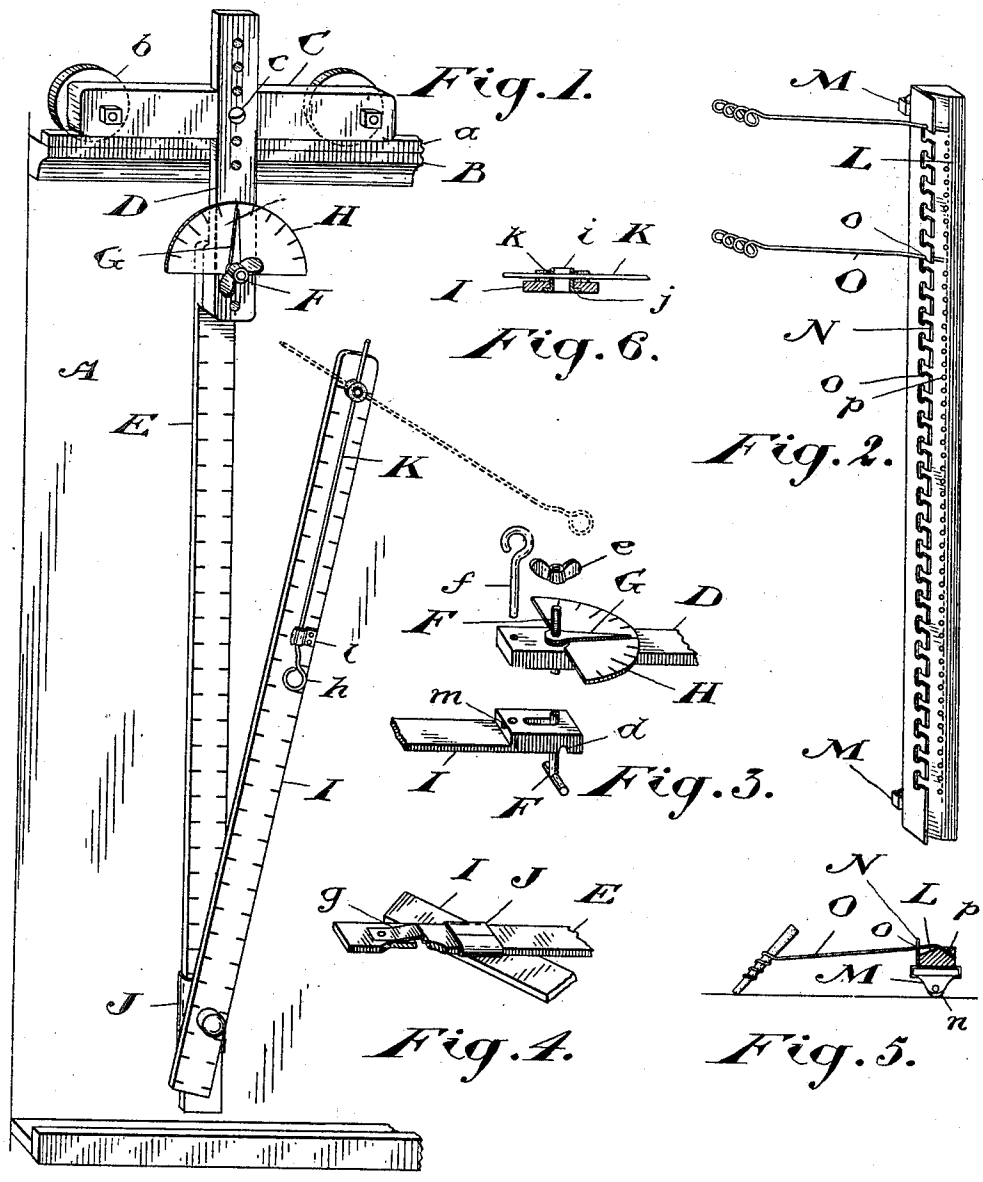


Fig. 1.

Fig. 6.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

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BLACKBOARD-RULER.

SPECIFICATION forming part of Letters Patent No. 668,957, dated February 26, 1901.

Application filed May 24, 1900. Serial No. 17,862. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HUGH FLETCHER, high-school teacher, of the town of Stratford, in the county of Perth, Province of Ontario, Canada, have invented certain new and useful Improvements in Blackboard-Rulers, of which the following is a specification.

The object of my invention is to devise a ruling appliance for blackboard use by means of which straight lines may be drawn at any angles, parallel horizontal lines drawn simultaneously with any desired spacing, and arcs of any desired radius described from any desired center; and it consists, essentially, of a car provided with wheels or rollers running on a track at the top of the blackboard, of a main ruler adjustably pivoted on the car, of a secondary ruler adjustably, pivotally, and removably clamped to the main ruler, of an arc-drawing attachment comprising an arm adjustably and pivotally clamped at one end to the secondary ruler and provided with a loop or hole at its other end through which a crayon may be passed, and of a multiple ruler which may be attached to the main ruler and is provided with a plurality of adjustable crayon-holders by means of which a plurality of crayons may be held in contact with the blackboard while the ruler is drawn along horizontally, the whole being constructed in detail substantially as hereinafter more specifically described.

Figure 1 is a perspective view of my improved blackboard-ruler. Fig. 2 is a perspective view of the multiple-ruler attachment. Fig. 3 is a perspective view showing the joint between the main ruler and the car, the parts being separated. Fig. 4 is a perspective detail, partly broken away, showing the means of connecting the secondary ruler with the main ruler. Fig. 5 is a cross-section of the multiple-ruler, showing a crayon in position. Fig. 6 is an enlarged sectional detail of the connection between the arc-drawing arm and the secondary ruler.

In the drawings like letters of reference indicate corresponding parts in the different figures.

A represents the surface of a blackboard. At the top of the board is located the track B, preferably provided with the wheel-guide *a*. On this track run the wheels *b*, journaled on the car C. This car comprises a cross-piece and a vertical piece D, adjustably secured to the cross-piece by means of the bolt *c*, which passes through the cross-piece and through any one of several holes in the vertical piece. This adjustable connection is for the purpose of adapting the ruler to blackboards of varying heights.

Upon the lower end of the vertical piece D of the car is pivoted the main ruler E. This connection may be of any desired construction; but I prefer to use that illustrated.

F is a bolt formed with a T-head, which head normally lies in a recess *d* in the back of the main ruler. (See Fig. 3.) This bolt passes through the vertical piece D and has slipped on it the index-finger G. The opposite sides of the bolt are flattened, as shown in Fig. 3, to prevent the finger turning on the bolt, the hole in the finger being of course of corresponding shape to the cross-section of the bolt.

e is a clamp-nut by which the parts may be tightened together.

Below the index-finger is located the graduated semicircle H, which is secured to the vertical piece D.

From this construction it follows that the main ruler may be set at any angle to the car and clamped in position by means of the clamp-nut *e* and at the same time the index-finger indicates the angle upon the graduated semicircle H.

In order to securely hold the main ruler in a vertical position, I bore properly-alined holes in the vertical piece D and the end of the main ruler and also provide a pin *f*, which may be inserted therein. (See Fig. 3.)

I is a secondary ruler pivotally connected to the slide J, which is vertically movable upon the main ruler E.

g is a spring-catch which may be depressed into a recess in the main ruler to permit the slide J to pass, but which normally lies in a position to engage the slide and prevent it slipping off the main ruler when the secondary ruler is in use. (See Fig. 4.)

To the upper end of the secondary ruler is connected the arc-drawing attachment, which comprises an arm K, preferably of wire, provided at one end with a hole or loop *h*, through

which a crayon may be inserted. The arm is passed through holes bored through opposite sides of a short tube *i*, journaled in the end of the secondary ruler and provided with a flange *j*, countersunk in the body of the ruler. This flange prevents the tube drawing out.

Surrounding the projecting end of the tube is a rubber washer *k*, through which the arm K passes. The friction of the rubber on the arm is sufficient to retain the latter in place while an arc is being described by means of a crayon inserted through the loop *h*. The center from which the arc is to be struck is seen by looking through the tube *i*.

If it be desired to shorten or lengthen the radius from which the arc is to be struck, it may be done by drawing the arm through the washer *k*.

When not in use, the arm is caught in the catch *l*, as shown in full lines in Fig. 1. This arm also serves the purpose of locking the secondary ruler parallel with the main ruler.

As shown at Fig. 3, the upper end of the main ruler is shouldered and a hole *m* formed therein, into which can be pushed the end of the arm K when brought in line with it.

In Fig. 2 is shown the multiple ruler, which comprises a bar L, preferably of wood. The back of this bar is provided with two slides M, adapted to embrace the main ruler E. Each slide has a small wheel or roller *n* journaled thereon. On one side of the bar L is secured a metal plate N. Behind this plate the wooden bar is cut away, as indicated. In this metal plate I cut a series of sockets *o*. Behind each socket a diagonal hole *p* is bored through the bar. (See Fig. 5.)

O represents a series of crayon-holders preferably formed of wire and having a spiral coil formed at one end, through which may be inserted a crayon. The other end of each crayon-holder is preferably bent, so that it may be inserted in one of the diagonal holes *p*. The holder is then slipped into one of the sockets *o*, as shown, when it will be found to be securely held. One of these holders with a crayon fixed therein is connected with the multiple ruler at every point where it is desired to draw a horizontal line on the blackboard. The multiple ruler is then slipped in position on the main ruler, which is preferably clamped in its vertical position. Now by pressing the multiple ruler against the blackboard and moving the whole apparatus from end to end parallel lines will be drawn upon the board at every point where a crayon-holder has been placed in position.

Other means might of course be provided for connecting the crayon-holders to the multiple ruler without departing from the spirit of my invention.

It will be noted that for convenience the main ruler is provided with a scale of inches commencing from its upper end and the secondary ruler with a scale of inches commencing from the center of the pivot-tube of the arc-drawing arm.

When the pin *f* is inserted in its hole in the vertical piece D, it may be used to hang maps upon, and this purpose it will serve whether the main ruler be in place or removed.

From the above description it will be seen that I have devised an apparatus by means of which straight lines may be drawn upon the blackboard at any desired angle, that I have provided means for drawing arcs of circles from any center with any desired radius, that I have provided means by which a series of parallel lines may be drawn horizontally on the board at any desired distance apart, that I have devised apparatus which relieves the operator almost entirely from supporting the weight of the ruling appliances when they are being used, and that I have devised apparatus which may be run quickly to any desired point on the blackboard and is always ready for use.

What I claim as my invention is—

1. In a blackboard-ruler, a horizontal track, near the top of the blackboard, in combination with a car movable on the said track, and a downwardly-extending ruler connected to and suspended from the said car, substantially as and for the purpose specified.

2. In a blackboard-ruler, a horizontal track near the top of the blackboard, in combination with a car movable on the said track; a downwardly-extending main ruler connected to and suspended from the said car; and a secondary ruler pivotally connected to the said main ruler, substantially as and for the purpose specified.

3. In a blackboard-ruler, a horizontal track near the top of the blackboard, in combination with a car movable on the said track; a downwardly-extending main ruler connected to and suspended from the said car; and a secondary ruler pivotally connected to a slide movable up and down the main ruler, substantially as and for the purpose specified.

4. In a blackboard-ruler, a horizontal track in combination with a car movable on the said track; a downwardly-extending main ruler connected to the said car; a secondary ruler pivotally connected to the said main ruler; and an arc-drawing attachment comprising an arm adjustably pivoted near the free end of the secondary ruler and provided at or near one end with a loop or hole for the insertion of a crayon, substantially as and for the purpose specified.

5. In a blackboard-ruler, a horizontal track in combination with a car movable on the said track; a downwardly-extending main ruler connected to the said car; a secondary ruler pivotally connected to a slide movable up and down the main ruler; and an arc-drawing attachment comprising an arm adjustably pivoted near the free end of the secondary ruler and provided at or near one end

with a loop or hole for the insertion of a crayon, substantially as and for the purpose specified.

6. In a blackboard-ruler, a horizontal track, near the top of the blackboard, in combination with a car movable on said track, a downwardly-extending ruler connected to and suspended from said car, and having a second ruler supported thereby, substantially as described.

7. In a blackboard-ruler, a horizontal track near the top of the blackboard, and a car movable on said track, in combination with a downwardly-extending main ruler pivotally connected to and suspended from the car; and means for clamping the ruler to the car at different angles, substantially as and for the purpose specified.

8. In a blackboard-ruler, a horizontal track near the top of the blackboard, and a car movable on said track, in combination with a downwardly-extending main ruler pivotally connected to and suspended from the car; a graduated semicircle secured to the car; a pointer swinging with the ruler; and means for clamping the ruler to the car at different angles, substantially as and for the purpose specified.

9. In a blackboard-ruler, a car in combination with a downwardly-extending main ruler pivotally connected to the car; means for clamping the ruler to the car at different angles; and a secondary ruler pivoted upon the main ruler, substantially as and for the purpose specified.

10. In a blackboard-ruler, a horizontal track, near the top of the blackboard, in combination with a car movable on the said track, a downwardly-extending ruler connected to and suspended from said car and having a second ruler supported thereby, and a crayon-holder supported by said second ruler, substantially as described.

11. In a blackboard-ruler, the secondary ruler I, in combination with the pivot-tube *i* provided with the flange *j*; the rubber washer *k* encircling the pivot-tube; the wire arm K passing through holes in the washer and tube, and the loop *h* formed at one end of the arm K, substantially as and for the purpose specified.

12. In a blackboard-ruler a main ruler E shouldered near one end and having a hole *m* formed therein; and a secondary ruler I pivoted on the main ruler, in combination with the pivot-tube *i* provided with the flange *j*; the rubber washer *k* encircling the pivot-tube; the wire arm K passing through holes in the washer and tube, and the loop *h* formed at one end of the arm K, substantially as and for the purpose specified.

13. In a blackboard-ruler, the combination of a horizontal track; a car comprising a cross-piece provided with wheels, and a vertical piece vertically adjustable on the cross-piece; and a ruler secured to the said vertical piece, substantially as and for the purpose specified.

14. In a blackboard-ruler, the combination of a horizontal track; a car comprising a cross-piece provided with wheels, a vertical piece secured to and suspended from the cross-piece and having a plurality of holes therein, and a pin coacting with the cross-piece and arranged to be inserted in any one of said holes, substantially as and for the purpose specified.

15. In a blackboard-ruler, the combination of a horizontal track; a car comprising a cross-piece provided with wheels, and a vertical piece secured to the cross-piece; a downwardly-extending ruler pivoted upon the said vertical piece, alined holes being formed in the vertical piece and the ruler; and a pin which may be inserted in the said holes, substantially as and for the purpose specified.

Stratford, Canada, May 14, 1900.

WILLIAM HUGH FLETCHER.

In presence of—

SOPHIE E. MARTY,

G. K. MILLS.