No. 723,039. PATENTED MAR. 17, 1903.

W. SCHMITT.

APPARATUS FOR RULING PARALLEL LINES.

APPLICATION FILED JULY 14, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

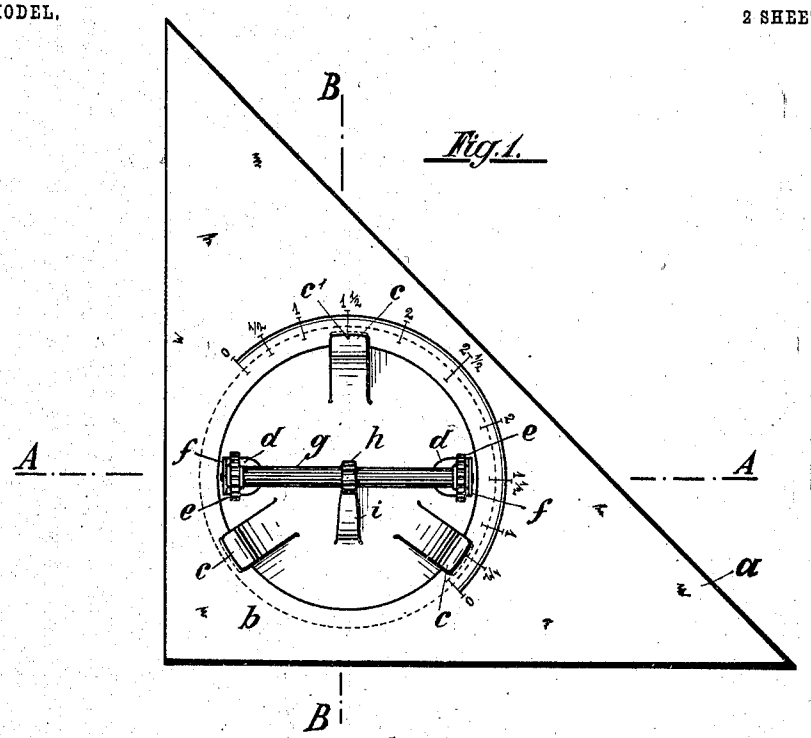


Fig. 2. Section A-A.

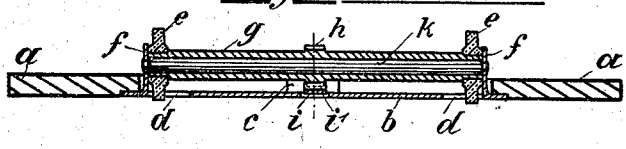
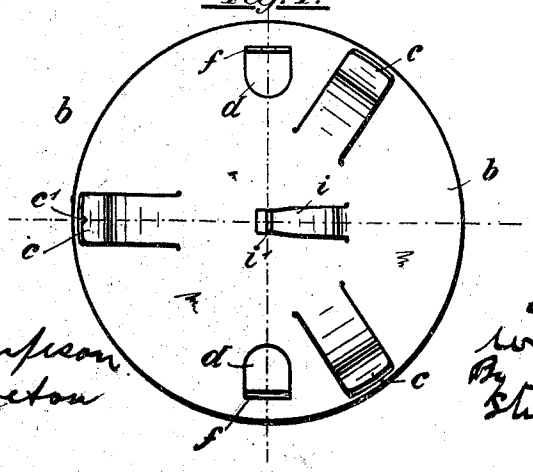


Fig. 3. Section B-B.



Fig. 4.



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Fig. 5.

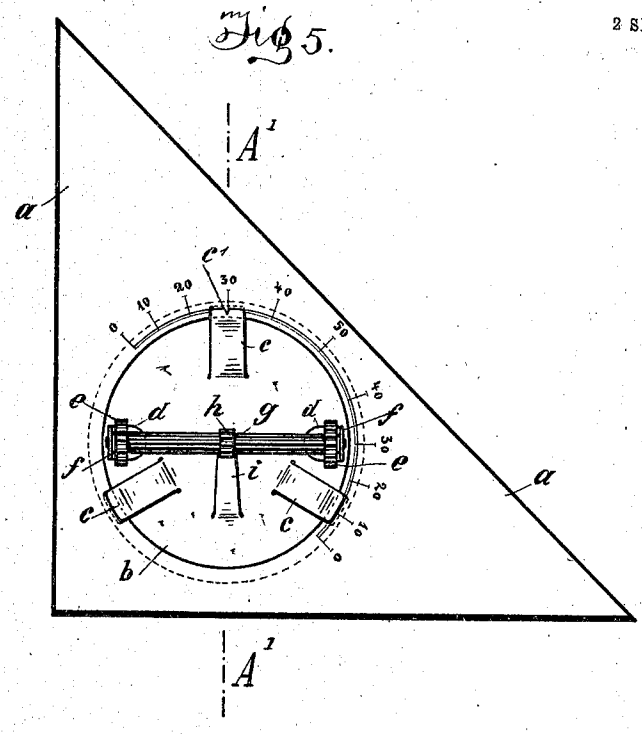


Fig. 6.

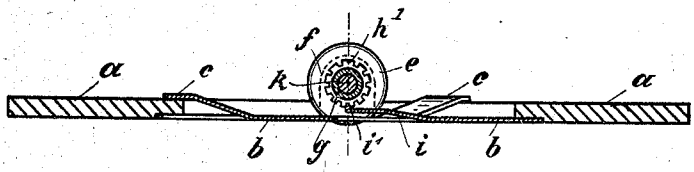


Fig. 7.



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WILHELM SCHMITT, OF STUTTGART, GERMANY.

APPARATUS FOR RULING PARALLEL LINES.

SPECIFICATION forming part of Letters Patent No. 723,039, dated March 17, 1903.

Application filed July 14, 1902. Serial No. 115,462. (No model.)

To all whom it may concern:

Be it known that I, WILHELM SCHMITT, a citizen of the German Empire, residing at Stuttgart, in the Kingdom of Würtemberg, Germany, have invented certain new and useful Improvements in Apparatus for Ruling Parallel Lines, of which the following is a description, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The object of the present invention is an apparatus for ruling parallel lines in any suitable positions and at any distances apart without the lines becoming confused. It is based on the principle that a revoluble shaft is given a constantly-equal backward rotation about its longitudinal axis by means of toothed wheels or the like, and such a shaft is arranged so as to be revoluble relatively to the sides of a set square or a polygonal-sided figure. By the backward rotation of this shaft *g* around its longitudinal axis the sides of the set square or polygonal figure are moved backward a certain distance, which is the greater as the axis of the shaft is brought more nearly parallel to the particular side of the set square or polygonal figure. If the revoluble shaft stands, for example, exactly parallel to the hypotenuse of the set square and it is rotated backward around its longitudinal axis, it follows that the greatest sliding movement is imparted to the hypotenuse. If, on the other hand, the shaft in question stands perpendicular to the hypotenuse, it will easily be seen that no transverse movement is imparted to the hypotenuse—that is to say, in the latter case the distance of the parallel lines from one another is *nil*. On the other hand, if the revoluble shaft *g* is arranged in any other position between these two before mentioned and is rotated backward the transverse movement of the hypotenuse of the triangular piece is the greater the more nearly parallel that the axis of the shaft is to the hypotenuse of the triangular piece and is less the nearer the axis of the revoluble shaft approaches a position perpendicular to the hypotenuse. The backward rotation is effected in a simple manner by a toothed wheel mounted firmly on the shaft, in the teeth of which a spring engages, and the said wheel may be set in rotation, together with the shaft, by a slight finger-pressure, which must be just sufficient to overcome the resistance of the spring.

The object of the invention is clearly shown in the accompanying drawings, in which—

Figure 1 is a plan view of the hatching apparatus. Fig. 2 is a section on the line A A of Fig. 1. Fig. 3 is a section on the line B B of Fig. 1. Fig. 4 is a detail view of the turning-plate, the shaft being removed. Fig. 5 is a plan of a slightly-modified form of the apparatus. Fig. 6 is a section on line A′ A′ of Fig. 5. Fig. 7 is a similar view of a toothed wheel of a different description.

In the drawings, *a* represents a set square of the usual type for drawing lines at an angle. A circular opening is provided in this set square, in which opening a turning plate *b* is fixed, being inserted from below in a groove in the edges of the recess and held from above by means of curved springs *c*, attached to the plate. The springs permit a sliding rotation of the plate in the opening in the set square. Two pieces *d* are stamped out opposite one another in this plate and are bent vertically upward and form the bearings *f*, in which the shaft *k* is rigidly fixed. On this shaft *k* is revolubly arranged the hollow shaft *g*, with the wheels *e*, which run on the drawing-surface and move the apparatus. The bearings *f* are so arranged relatively to the springs *c*, which stand at one hundred and twenty degrees from one another, that one spring *c* is always vertical to the shaft *g*. This spring *c* is provided with a notch *c′*, by means of which the distance of the shaft from the vertical to one of the sides of the set square may be read off by means of a scale which is marked around the circumference of the opening in the set square in which the turning plate is arranged. After the moving of the shaft into the working position the set square is moved backward. The turning back of the shaft is such that the hatching can be effected by drawing lines along a suitable side of the set square. In the middle of the shaft *g* a toothed wheel *h* is arranged. A spring *i*, which is also stamped out from the turning plate *b* and is bent upward and provided with a catch *i′*, engages with this wheel, and when a slight finger-pressure is applied to the latter the shaft is moved backward

from the side of the set square in question, moving the latter backward. The more the shaft is adjusted out of parallelism to the side of the set square in question so much greater is the backward movement of the said side produced by the rotation of the toothed wheel and so much wider is the resulting cross-hatching. If the shaft *g* is vertical to the side of the set square and is adjusted, the said side moves in a straight line, and thus produces a straight line. Instead of the toothed wheel being provided with teeth of equal pitch the teeth *h'* may be of varying size, as shown in Figs. 5, 6, and 7, so that the backward movement takes place at first slowly and then increasingly quicker in order to produce shading on a drawing instead of cross-hatching. I do not restrict myself to the particular form of square shown.

I declare that what I claim is—

1. In an apparatus for ruling parallel lines, the combination of a figure having sides of the required contour, a turning plate revolubly mounted in an opening in said figure, a shaft mounted on said turning plate, means for checking the rotation of the shaft, and means mounted on the shaft whereby when rotated it may move the figure over the paper.

2. In an apparatus for ruling parallel lines, the combination of a figure having sides of the required contour and having an opening in its center, a turning plate revolubly mounted in said opening, a shaft revolubly mounted on said turning plate, means mounted on said shaft for working on the drawing-surface, a toothed wheel mounted on said shaft, and a spring adapted to engage with the toothed wheel, and to check its rotation, whereby the figure may be moved backward by the required amount each time before a line is ruled, substantially as described.

3. In an apparatus for ruling parallel lines, the combination of a figure having sides of the required contour, a turning plate mounted in an opening in said figure, a shaft mounted on said turning plate, means mounted on said shaft for working on the drawing-surface, a toothed wheel having teeth of varying size, and a check-spring adapted to engage in the teeth of said wheel, whereby shading-lines may be produced on the drawing, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILHELM SCHMITT.

Witnesses:

WALTER SCHWAEBSCH,

RUDOLF STÄZBACH.