J. GARDAM.

PARALLEL RULER.

No. 192,161. Patented June 19, 1877.

Fig. 1.

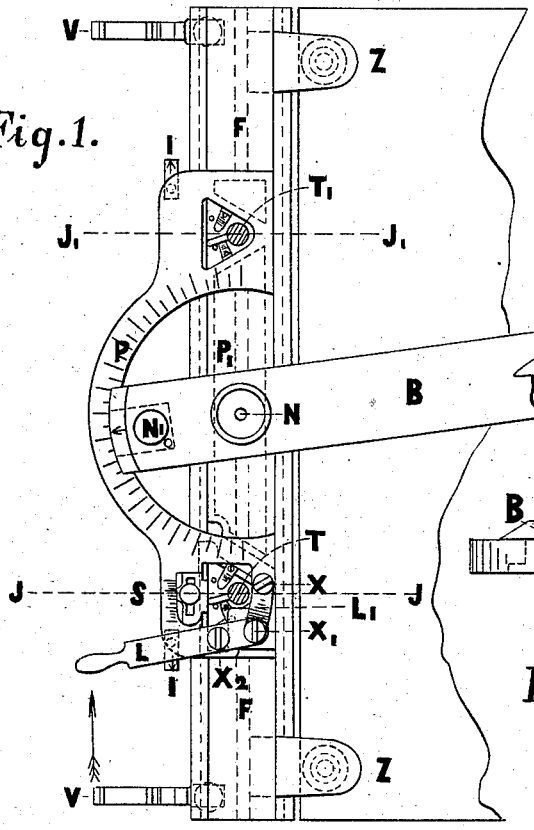
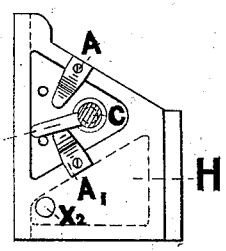


Fig. 3.



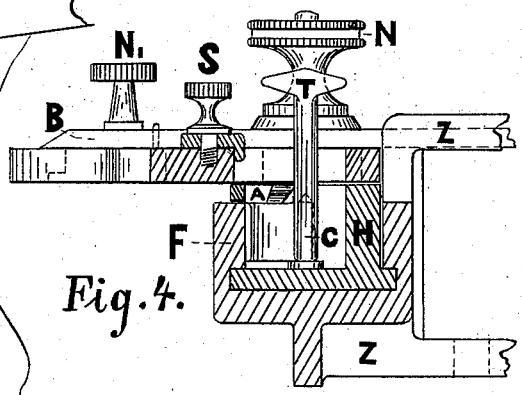


Fig. 4.

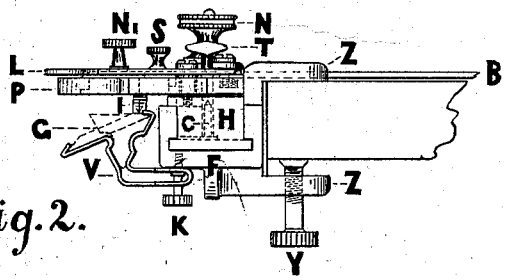


Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

JOSEPH GARDAM, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN PARALLEL RULERS.

Specification forming part of Letters Patent No. **192,161**, dated June 19, 1877; application filed May 9, 1877.

To all whom it may concern:

Be it known that I, JOSEPH GARDAM, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Parallel Rulers, which improvement is fully set forth in the following specification and accompanying drawing, in which—

Figure 1 and Fig. 2 illustrate the plan and end view of my proportional parallel rule, Fig. 3 and Fig. 4 being respectively an enlarged plan and vertical transverse section through line J J.

The object of my invention is to furnish an instrument for draftsmen which shall meet the requirements of the T-square and scale combined, as also enabling the draftsman to accurately draw any number of lines to the inch, without preparatorily dividing said inch to the number of lines therein to be drawn.

The instrument consists of a protractor, P, preferably cast to a guide piece or slide, P_1, sliding in a recessed frame, F, held to the drawing-board by lugs Z and screws Y, said protractor P having a limb or blade, B, turning on its center N, and clamped to the graduations of the protractor P by means of vernier-clamp N_1. An additional guide piece or slide H, more clearly shown in plan, Fig. 3, is placed in frame F, and connected to lever L by the traveling-pivot X_2, lever L being connected to protractor P by movable link L_1 on pivots X and X_1.

Slides P_1 and H are furnished with triangular cavities, in which are mounted center-pins C, designed to support the toggles or keys T and T_1, and so placed as not to permit of the insertion of toggles or keys T and T_1 except it be at an angle either above or below the center lines J J and J_1 J_1. The springs A and A_1 are provided to insure the constant contact of the toggle or key edges with the inner face of frame F.

Attached to frame F are two springs, V V, so constructed as to hold scales G of either trapezoidal or triangular section, as shown in Fig. 1 and Fig. 2, protractor P being supplied with indices I, traveling with the protractor P over either scales G, and consequently showing the absolute amount of movement on the part of blade B.

In using the instrument apply the left-hand thumb and forefinger to lever L, the stroke-length of which is governed by an index-stop clamped to its corresponding graduations by screw S. It will now be evident that if the toggles or keys T and T_1 are placed over their pins C, with their wards parallel and below their corresponding center lines J J and J_1 J_1, a pressure on the lever L in the direction of the arrow will cause slide H to move in the same direction, but by the retrogression of lever L the toggle or key T is caused to jamb on the inner face of frame F, thereby holding slide H in position, and subsequently causing a movement of slide P_1, protractor P, and blade B in the direction of the arrow. The eventual amount of movement of blade B produced by a full action of lever L is, therefore, an amount equal to that indicated by the index-stop at S on its corresponding graduations. A successive number of movements on the part of lever L will, therefore, give any desired number of lines separated by equal distances.

By placing the wards of the toggles or keys above their center lines, a movement of blade B in the opposite direction is obtained, and by placing the wards in opposite directions the instrument becomes fixed.

In using the instrument as an ordinary T-square, displace one of the toggles and turn the other so as to escape the inner face of frame F.

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

1. A guided protractor with movable blade propelled by a linked lever, in conjunction with two toggles or keys, to produce the parallel motion of the blade, substantially as shown and described.

2. The graduated index-stop S, as required for the purpose set forth.

3. The combination of the springs V V with the frame F, for the purpose of supporting scales of either trapezoidal or triangular section, substantially as specified.

JOSEPH GARDAM.

Witnesses:

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