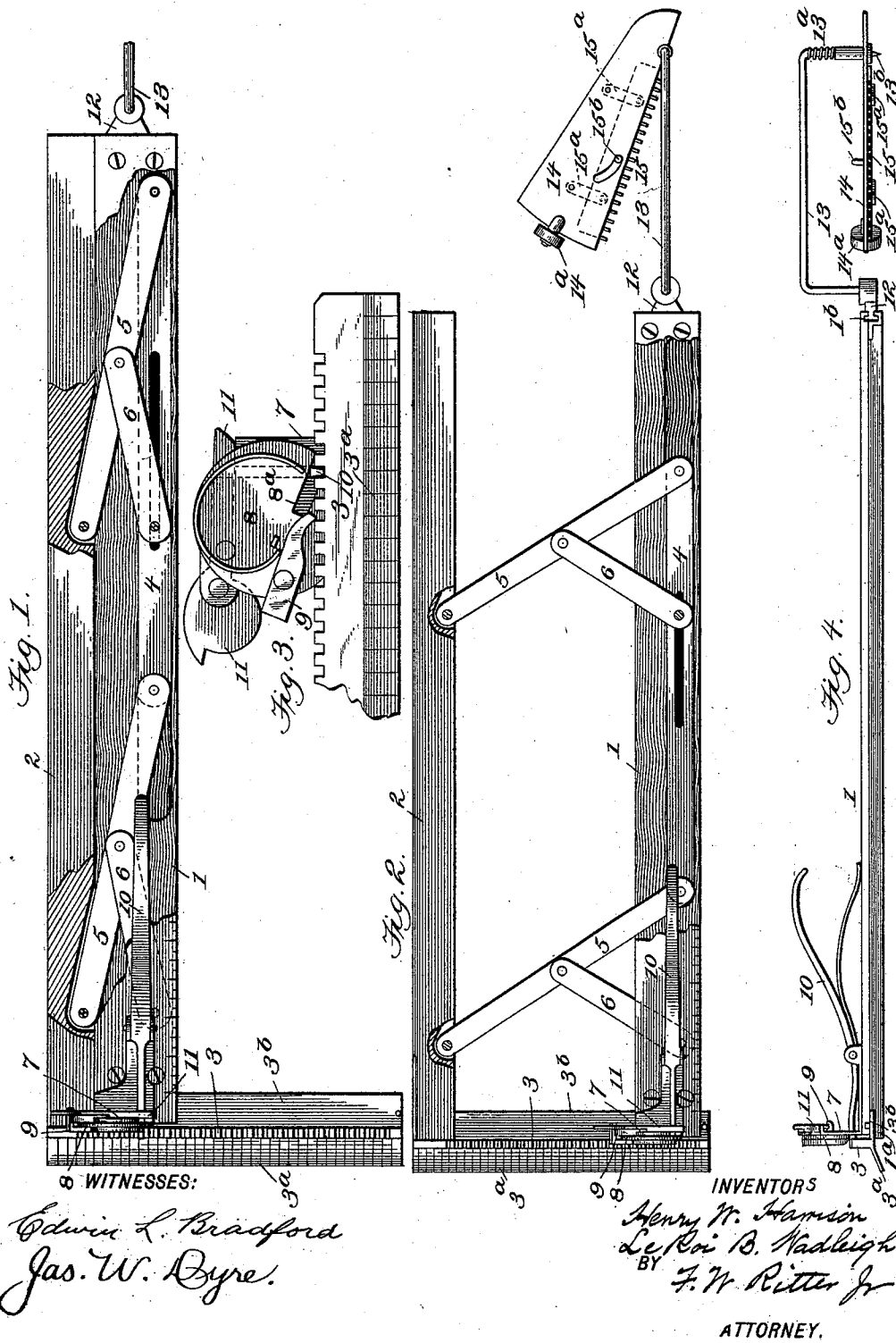


(No Model.)

H. W. HARRISON & LE ROI B. WADLEIGH.
DRAFTING INSTRUMENT.

No. 534,745.

Patented Feb. 26, 1895.



UNITED STATES PATENT OFFICE.

HENRY W. HARRISON AND LE ROI B. WADLEIGH, OF CLINTON, IOWA.

DRAFTING-INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 534,745, dated February 26, 1895.

Application filed November 27, 1894. Serial No. 530,166. (No model.)

To all whom it may concern:

Be it known that we, HENRY W. HARRISON and LE ROI B. WADLEIGH, citizens of the United States, residing at Clinton, in the county of Clinton, State of Iowa, have invented certain new and useful Improvements in Drafting-Instruments; and we hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1, is a plan view, partly in section, of a drafting instrument embodying our invention, the base-bar and rule-bar in juxtaposition to enable the instrument to be used as a square. Fig. 2, is a plan view, the base-bar and rule-bar separated as when in use as a parallel rule, the base-bar being partly broken away to show the slide bar to which the rule-bar is coupled. Fig. 3, is an enlarged detail end view showing the mechanism by which the step by step movement of the rule-bar is effected; Fig. 4, an elevation, or edge view, taken from the side of the base-bar.

Like symbols refer to like parts wherever they occur.

Our invention relates more especially to the construction of parallel rulers and the mechanism for obtaining a regular step-by-step movement of the rule-bar with relation to the fixed or base bar; and in conjunction therewith a means for describing circles or curves, the device when taken as a whole constituting a simple, compact, and efficient drafting instrument of general utility.

To this end the main feature of our invention embraces, the combination with a base-bar, of a rule-bar having at right angles thereto a rack, and ratchet mechanism mounted on the base-bar and arranged to engage the rack and impart a regular step-by-step movement to the rule-bar with relation to the base-bar.

A second feature of our invention embraces, the combination with a base-bar and ratchet mechanism mounted thereon, of a rule-bar and rack with which the ratchet mechanism engages, a slide bar arranged on the base-bar, and levers pivotally connected with the slide-

bar and the rule-bar whereby the parallel movement of the rule-bar is insured.

A third feature of our invention embraces, the combination with the base-bar and rack, of an eccentrically pivoted or swinging disk provided with a dog or ratchet, and a lever for actuating the disk, the whole constituting a ratchet mechanism operated from a point on the base-bar, whereby the means for imparting the step-by-step motion to the rule bar is located within the easy and natural position of the left hand of the draftsman.

There are other, minor, features of invention, all as will hereinafter more fully appear.

We will now proceed to describe our invention so that others skilled in the art to which it appertains may apply the same.

In the drawings 1, indicates the base-bar or bar which remains fixed when the device is used as a parallel ruler, and said bar may have a straight edge and scale marks if desired.

2 indicates the rule-bar or movable bar of the parallel ruler, and said bar has connected with one end and extending therefrom at right angles a rack-bar 3 having on its outer side a straight edge 3^a which if desired may have scale marks, and on its inner side a straight edge flange 3^b which enters a guide recess 1^a in the corresponding end of base-bar 1.

4 indicates a slide-bar, arranged to move longitudinally in a suitable groove of the base-bar 1, and said slide is connected with the rule-bar 2 by a plurality of levers 5, 5, which are pivotally connected with said slide-bar and rule-bar, and are in turn connected with the base-bar 1 by short levers 6, 6, pivotally connected with the base-bar 1 and with the centers of the levers 5, 5, by which mechanism the parallelism of the base-bar and rule-bar is constantly maintained during the step-by-step movement of the rule-bar.

Eccentrically pivoted in a suitable upright 7, secured to base-bar 1, adjacent to the rack-bar 3, is a swinging disk 8, on which is a spring ratchet or dog 9 adapted to engage the rack bar 3, and said swinging disk 8 is actuated (and through it the dog 9) by a spring

lever 10 pivoted on the base-bar 1, one arm of which passes through a slot in the upright 7 and enters a transverse slot 8^a in the said swinging disk, while the other arm extends longitudinally of base-bar 1 within easy reach of the left hand of the draftsman.

Pivoted on the upright 7 is a cam lever 11, arranged to engage the tail of the ratchet or dog 9 to lift the dog and hold it against the operation of the spring and out of engagement with the rack 3 when the bars 1 and 2 are to be separated.

That end of the base-bar 1 opposite to the rack and ratchet mechanism is provided with a T slot 1^b (see Fig. 4) for the reception of an extension or bracket plate 12 on which is pivoted one leg of U-bar 13 the other or distant leg 13^a of which is armed with a pin 13^b and forms the pivot of a swinging plate 14, said plate supported at its free end by a small roller 14^a if desired. One edge of said plate 14 should be straight and in a radial line from the center pin 13^b. Movable supported on the under side of plate 14 by straps 15^a, or in equivalent manner so that it can be projected beyond the straight edge of plate 14, is a toothed or serrated plate 15 for the purpose of guiding the pencil while drawing curves or circles; and in order to retract plate 15 when it is desired to use the straight edge of plate 14 for making radial lines, a peg 15^b is provided, said peg extending up through a suitable slot in plate 14, as indicated in Fig. 2, of the drawings.

The devices, being constructed substantially as hereinbefore described will be operated as follows: The parts being in the position shown in Fig. 1, it will be at once evident that the straight edge flange 3^b of rack bar 3 taken in conjunction with the straight lower, or outer, edge of base-bar 1 constitutes an efficient square; and that by projecting the indented plate 15 and fixing the pin-point 13^b and leg 13^a, any desired curve or circle whose radius is equal to, or less than, the length of swinging plate 14, can be described. To separate the rule-bar 2 from the base-bar 1, the arm of cam lever 11 is thrown up to depress the tail of ratchet or spring dog 9 and lift the dog out of engagement with rack-bar 3, whereupon the base-bar 1 can be drawn back or the rule-bar pushed forward to separate the two—as, and to the distance desired, after which the arm of cam lever 11 is pressed down thus releasing spring dog 9 and allowing it to again engage rack-bar 3. Now if the free end of pivoted spring lever 10 is depressed, the swinging disk 8 will be moved and with it the dog 9 which, through its action on rack-bar 3 and rule-bar 2 connected therewith, causes the rule-bar to advance one step—or any predetermined distance dependent on the distance between the teeth of the rack. When the spring lever 10 is released, it rises, thereby imparting a return movement to swinging disk 8 and retracting the spring dog 9 so as to

cause it to engage the succeeding tooth of rack 3. As said steps are repeated the rule-bar 2 recedes—or approaches the base-bar 1 by regular steps—the parallelism of the rule-bar being preserved by the link or lever mechanism 5, 5, and 6, 6, and slide bar 4, as hereinbefore pointed out.

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

1. The combination with a rule-bar, of a rack attached thereto, a base-bar on which the rack-bar moves, and mechanism mounted on the base-bar and arranged to actuate the rack-bar, substantially as and for the purposes specified.

2. The combination with a rule-bar having a rack-bar at right angles thereto, of a base-bar arranged parallel to the rule-bar and with which the rack-bar engages, and ratchet mechanism mounted on the base-bar and arranged to engage the rack-bar, substantially as and for the purposes specified.

3. The combination with a rule-bar provided with a rack-bar, of a base-bar with which the rack-bar engages, a swinging disk mounted on the base-bar and provided with a pawl or dog which engages the rack-bar, and means for actuating the swinging disk, substantially as and for the purposes specified.

4. The combination with a rule-bar provided with a rack-bar, of a base-bar with which the rack-bar engages, a swinging disk provided with a pawl or dog which engages the rack-bar, and a cam lever arranged to depress the tail of the pawl or dog and disengage it from the rack-bar, substantially as and for the purposes specified.

5. The combination with a rule-bar provided with a rack-bar, of a base-bar with which the rack-bar engages, a swinging disk provided with a pawl or dog which engages the rack bar, and a spring lever mounted on the base-bar and arranged to engage and actuate the swinging disk; substantially as and for the purposes specified.

6. The combination with a rule-bar, of a base-bar, a slide-bar arranged on the base-bar, and a plurality of levers pivoted on the rule-bar and the slide-bar, substantially as and for the purposes specified.

7. The combination with a rule-bar, of a base-bar, a slide-bar arranged on the base-bar, a plurality of levers pivotally connected with the rule-bar and the slide-bar, and a lever pivotally connected with the base-bar and one of the levers which connect the slide-bar and rule-bar; substantially as and for the purposes specified.

8. The combination with the base-bar, of a U-bar pivoted thereon, a swinging plate pivoted on the distant leg of the U-bar, and a movable serrated plate mounted on the swinging plate, substantially as and for the purposes specified.

9. The combination with the base-bar, of

a U-bar one leg of which is pivoted on the base-bar, a swinging plate one end of which is pivoted on the distant leg of the U-bar and its opposite end provided with a roller, and a
5 serrated plate movably connected with the swinging plate, substantially as and for the purposes specified.

In testimony whereof we affix our signa-

tures, in presence of witnesses, this 24th day of November, 1894.

HENRY W. HARRISON.
LE ROI B. WADLEIGH.

Witnesses:

T. B. KING,
A. G. SMITH,
B. F. MILES.