E. C. GILLETTE.

Parallel Ruler.

No. 46,348. Patented Feb. 14, 1865.

Fig. 1.

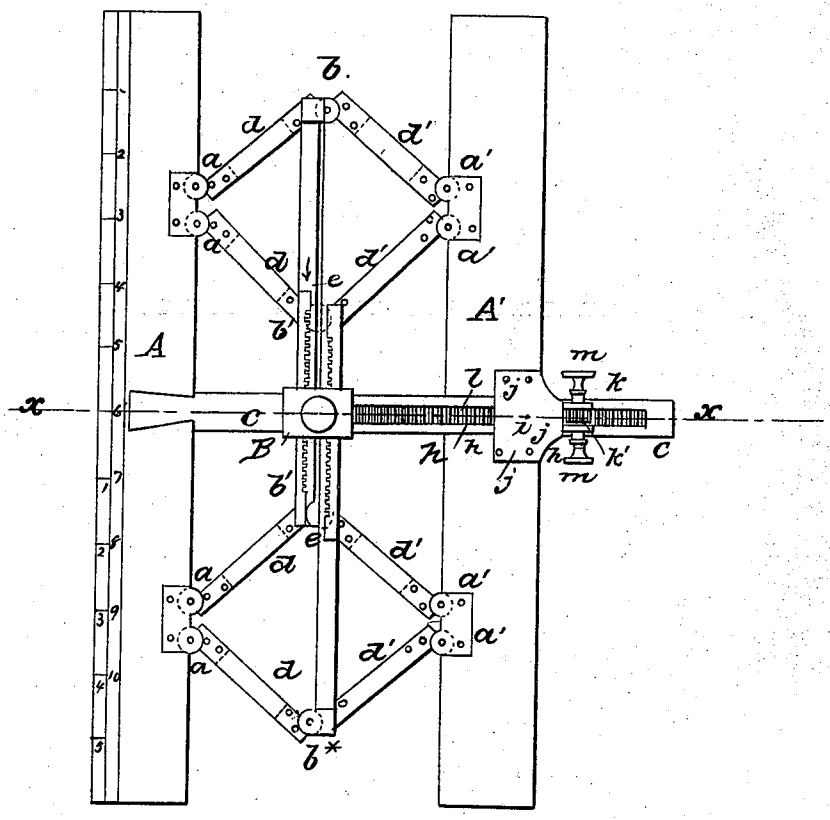
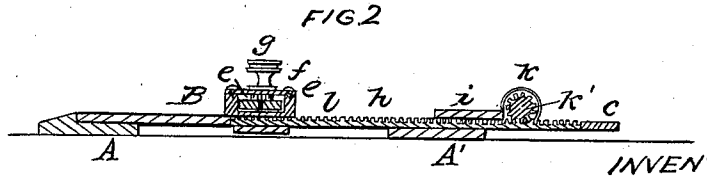


FIG 2



INVENTOR

E. C. Gillette

By Munn & Co

attys.

WITNESSES

M. M. Livingston

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

E. C. GILLETTE, OF RICHFIELD, BRITISH COLUMBIA.

IMPROVEMENT IN PARALLEL RULERS.

Specification forming part of Letters Patent No. **46,348**, dated February 14, 1865.

To all whom it may concern:

Be it known that I, E. C. GILLETTE, of Richfield, in British Columbia, have invented a new and Improved Parallel Ruler; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a plan or top view of my invention. Fig. 2 is a transverse vertical section of the same, taken in the plan, indicated by the line *x x*, Fig. 1.

Similar letters of reference indicate like parts.

This invention consists in connecting the two bars of a parallel ruler by levers joined together by cogged bars in such a manner that the instrument is made to open vertically, and errors arising from an inaccuracy in the workmanship of the instrument, or from unequal wear of the joints, are avoided.

The invention consists, also, in combining with the parallel rulers a graduated limb in such a manner that the same distances which are laid off horizontally by one of the bars of the parallel ruler can be laid off vertically by said graduated limb.

Parallel rulers of the ordinary construction consist of two bars, which are hinged together by two plates placed diagonally across them. The upper or moving bar in the instrument deflects to one side when opened, which is inconvenient. This instrument is also very liable to error, inasmuch as the connecting-plates act independently of each other, and if they are not attached to the parallel bars at precisely the same angle, or if the joint of one becomes any more worn than that of the other, the error caused by this difference multiplies as the bars separate. These disadvantages are overcome by my invention, in which the two bars A A′ of the parallel ruler are connected by four levers, *d d′*, as clearly shown in Fig. 1 of the drawings. The levers *d* are connected to the bar A by hinge-joints *a* at about equal distances from the center of said bar, and the levers *d′* are connected to the bar A′ by hinge-joints *a′*, corresponding in position to the position of the hinge-joints *a* on the bar A. The loose ends of the levers *d d′* are finally connected by hinge-joints *b b* b′ b′**, so that the joints *b b** are turned out and the joints *b′ b′** in or toward each other. The joints *b b′* and *b* b′**, respectively, are connected by cogged bars *e e*, which are guided by a carriage, B, that slides back and forth on a limb, *c*, extending from the bar A at right angles to the same. Said carriage forms the bearings for the arbor of a pinion, *f*, which gears into the cogged bars *e e*, as shown in Fig. 2. A button, *g*, secured to the upper end of this arbor, serves to turn the same in either direction, and by turning this button in the direction of the arrow marked on it in Fig. 1 the cogged bars *e e* move toward each other, and the joints *b b** of the jointed levers are drawn toward the joints *b′* b′*. By this motion the bars A A′ are thrown apart. In order to close up these bars the button *g* has to be turned in the direction opposite the arrow marked on it.

The limb C, which forms the guide for the carriage B, is rigidly attached to the bar A of the parallel ruler, and it passes freely through a groove or mortise, *h*, cut into the surface of the bar A′. In this groove said limb is retained by a plate, *i*, which is secured to the bar A′ by screws *j*, or in any other suitable manner, and from which extend two lugs, *k*, forming the bearings for the horizontal arbor of the pinion *k′*. This pinion gears in a toothed rack, *l*, that is mortised into the limb C and two buttons, *m*, which are attached to the ends of the horizontal arbor which carries the pinion *k′*, serve to turn said pinion in either direction. By these means the parallel ruler can be opened or closed independent of the carriage B and cogged bars *e e*.

By marking the bar A and the limb C with suitable graduations or scales, the horizontal and vertical distances can be read off at a glance, and by this application of the hinged levers *d d′* the bars A A′ are compelled to open parallel under all circumstances.

What I claim as new, and desire to secure by Letters Patent, is—

1. The levers *d d d′ d′*, joined together by the cogged bars *e e*, in combination with the bars A A′ of a parallel-ruler, constructed

and operating substantially in the manner and for the purpose herein shown and described.

2. The graduated limb C, applied in combination with the two parts of the parallel ruler, substantially as set forth, for the purpose of laying off vertically the same distance which can be measured horizontally on the bar A.

E. C. GILLETTE.

Witnesses:
G. F. LEE,
DAV. B. CHISHOLM.