R. DUTHIE.

DEVICES FOR DRAFTING SHIPS' LINES FROM A MODEL.

No. 193,755. Patented July 31, 1877.

Fig. 2.

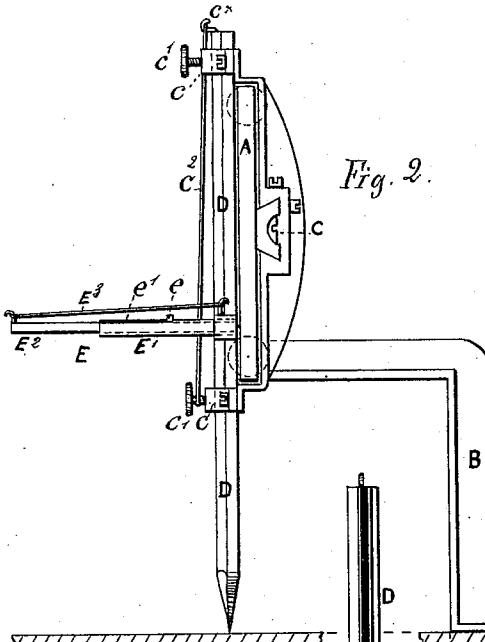
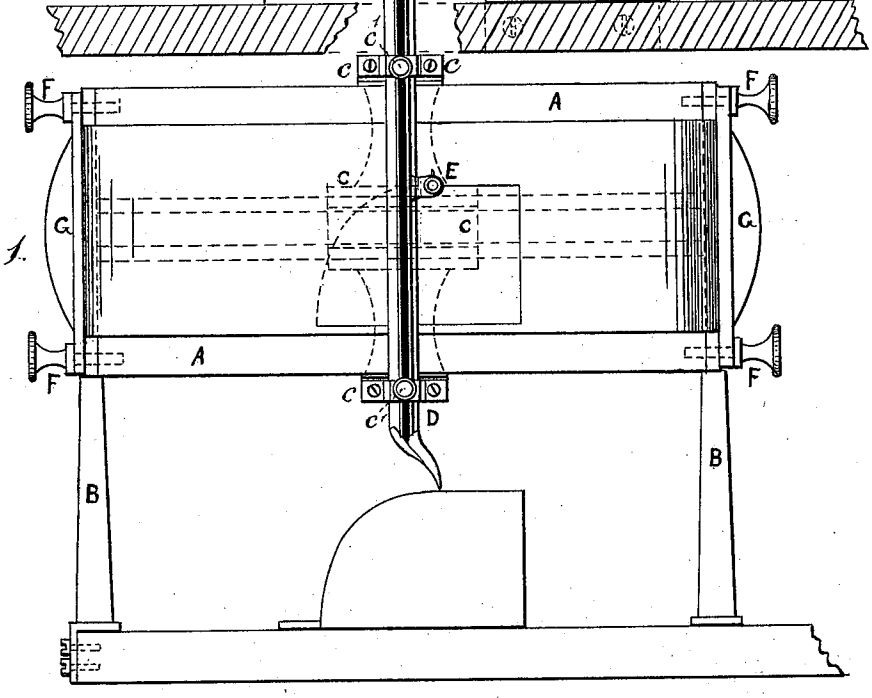


Fig. 1.



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IMPROVEMENT IN DEVICES FOR DRAFTING SHIPS' LINES FROM A MODEL.

Specification forming part of Letters Patent No. **193,755**, dated July 31, 1877; application filed June 23, 1877. Patented in England May 18, 1876, for 14 years.

To all whom it may concern:

Be it known that I, ROBERT DUTHIE, of Aberdeen, North Britain, ship-builder, a subject of the Queen of Great Britain, have invented or discovered a new and useful Improved Instrument for Drawing or Setting Out Ships' Lines from a Model and the lines and curves of other models and objects; and I do hereby declare the nature of the said invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof—that is to say:

My invention of a new or improved instrument for drawing or setting out ships' lines from a model, and the lines and curves of other models or objects, consists of the arrangement of a drawing-board fixed to brackets, and carrying a slide with a tracing pointer and pencil, so that by drawing the pointer over the curved sides of a model the lines may be easily and accurately drawn or transferred to paper without having recourse to the troublesome method of measurements and ordinates.

The construction of the apparatus and method of using it are as follows:

Attached to two upright brackets is a small drafting-board, fitted with a slide which can move from end to end of the board. In the slide is fitted a movable tracing-bar, carrying a drawing-pencil. On the ends of the board are screwed knobs and bars to clamp the drawing-paper onto the board. The apparatus being thus constructed, it is fixed on a table, the ship's model being placed at right angles to and under the board. The paper is then clamped on. A batten divided into the frame-spaces required is placed along the keel of the model, so that the model may be moved accurately to the extent of one space at a time for drawing the frame-lines. When the model is in its proper place, and the tracing-bar is placed on the top side of model, insert the pin of pencil-holder in the slot; then move the slide toward the keel, when the point of tracing-bar will follow the curve of the model, and the pencil will duplicate the same curve on the drawing-paper. When longitudinal lines are to be taken the model must be placed in a line with the drafting-board.

The pressure of the pencil on the paper is regulated by a spiral metal spring or india-rubber band, E^1, the pencil being prevented from turning in the slide by means of a slot, *e*, and pin *e'*. By releasing the pin the pencil is prevented from marking while the tracing-bar is being put in position to draw the next curve.

In order that my invention may be better understood and more readily put into practical operation, I will now proceed to describe the sheet of drawings hereunto annexed.

Figure 1 is a front elevation of my apparatus as fitted for use. Fig. 2 is a side elevation of the drafting-board and slide.

Similar letters of reference apply to similar parts in the two views.

A A is the drafting-board for the reception of the sheets of drawing-paper on which the curves have to be drawn. B B are brackets for the support of the board, and having a space between them to receive the model. C is a double slide, capable of moving horizontally the whole length of the board, and fitted with a vertical tracing-bar, D, moving between friction-rollers; or, if desired, the rollers may be dispensed with, and a plain slide, *c*, substituted. The lower end of the bar D is drawn out to a point for passing over the model. The bar carries about midway of its length a pencil-holder, E, and pencil, so that by passing the point of the bar D over a model a similar curve would be traced by the pencil E on the drawing-paper.

The bar D is provided with a hook, $c^{\times}$, or similar device, to which one end of a spring, rubber band, or other yielding device is attached, the other end being fastened to the slide-bracket or its set-screw c^1, said yielding device serving the purpose of holding the bar D upon the model, and following its form accurately.

The pencil-holder E consists, essentially, of a slide, E^1, one end of which is rigidly affixed to the bar D, at right angles thereto. The other end of the slide E^1 is slotted, as shown at *e'*, and E^2 is the pencil-holder proper, carrying a stop-pin, *e*, which fits into the slot *e'*, and prevents the pencil from turning around. E^3 is a spring, rubber band, or similar yielding devices, attached to the pencil-holder and slotted sleeve or slide, and serves to hold the

point of the pencil to the face of the paper during the movements of the bar D. The screwed knobs F F and clamps G G are for holding the paper firmly to the board while in use.

The above description and accompanying drawing clearly set forth the construction and method of using my improved apparatus; but I do not confine myself strictly to the mechanical details therein, as the same may be varied in many ways without departing from the principle of my invention, as also may the height and width, according to requirements.

Having now particularly described and ascertained the nature of my invention, and how the same may be put into practical operation, I would have it understood that what I claim, and desire to secure by the hereinbefore in part recited Letters Patent, is—

1. A drafting-instrument for drawing or setting out ships' line from a model, consisting, essentially, of a guide or drafting bar, adapted to move vertically and horizontally, and carrying a suitable marker at right angles thereto, and a drafting-board mounted in a suitable frame, all constructed and arranged in such manner that the movements of the guide-bar upon the surface of a model will cause the marker to reproduce corresponding lines upon a sheet of paper held upon the drafting-board, substantially as described, for the purpose specified.

2. The combination, with the brackets B and the drafting-board A, of the clamps G and the set-screws F, substantially as described, for the purpose specified.

3. In combination with the drafting-board A of the slide C, the guide or index-bar D, and pencil-holder E, substantially as described, for the purpose specified.

4. The combination, with the board A, of the slides C and c, the set-screws c^1, the guide-bar D, and pencil-holder E, and a yielding connection, c^2, between the upper end of the guide-bar D and the lower slide-bracket c or its set-screw c^1, substantially as described, for the purpose set forth.

5. The two-part pencil-holder E, consisting of the slotted sleeve E^1, the pencil-holder E^2, having a stop-pin, e, and a yielding connection, E^3, between the sleeve and pencil-holder, in combination with the guide-bar D and board A, all arranged, constructed, and operating substantially as described, for the purpose specified.

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