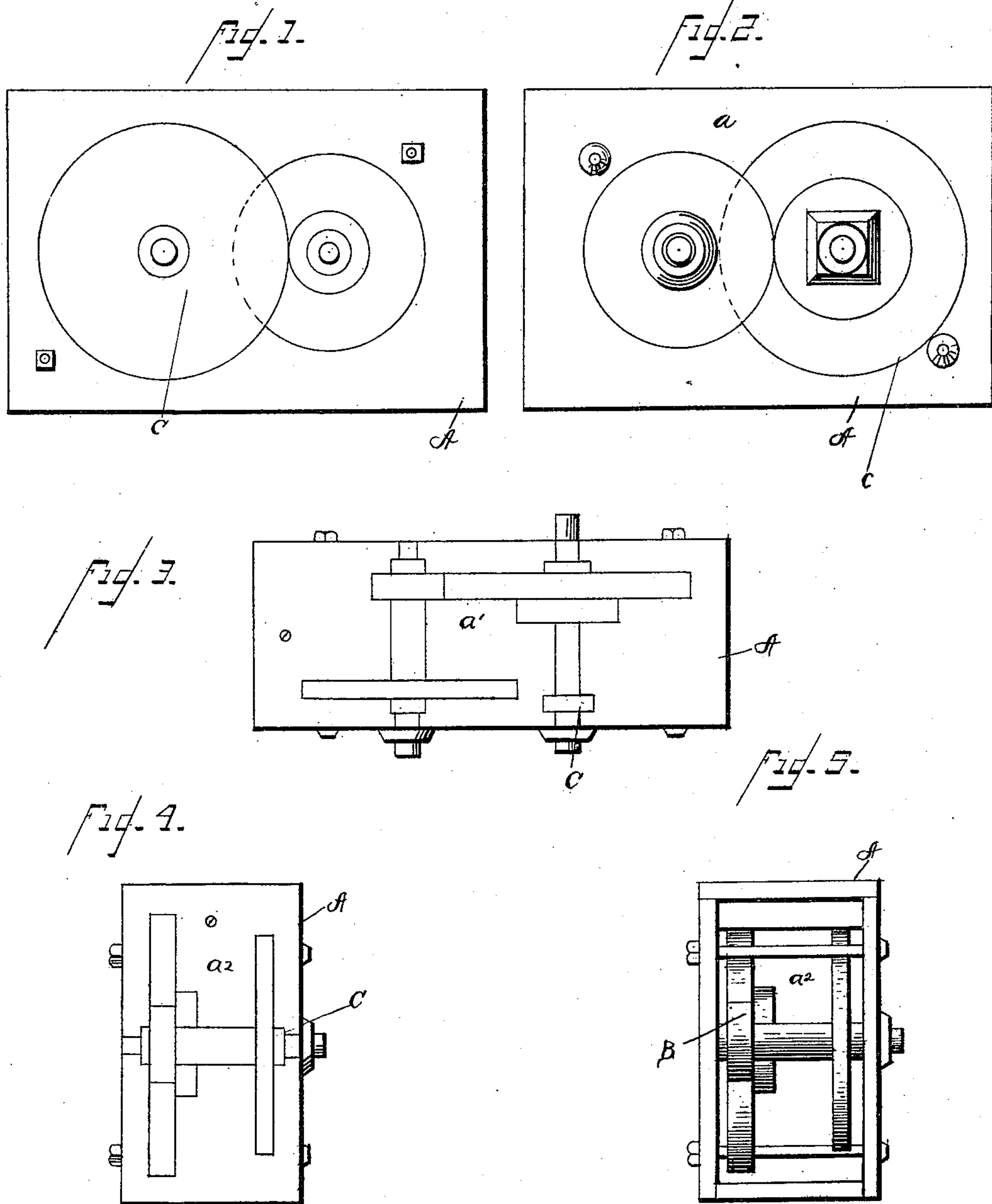


(No Model.)

N. O. STARKS.  
DEVICE FOR TEACHING DRAWING.

No. 471,442.

Patented Mar. 22, 1892.



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# UNITED STATES PATENT OFFICE.

NILS O. STARKS, OF MADISON, WISCONSIN.

## DEVICE FOR TEACHING DRAWING.

SPECIFICATION forming part of Letters Patent No. 471,442, dated March 22, 1892.

Application filed April 10, 1889. Renewed November 11, 1891. Serial No. 411,548. (No model.)

*To all whom it may concern:*

Be it known that I, NILS O. STARKS, a citizen of the United States, and a resident of Madison, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Devices for Teaching Drawing; 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 which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

The invention is a new and useful device for teaching drawing, either mechanical or otherwise; and it consists in the improved construction hereinafter more fully pointed out, described, and illustrated in the accompanying drawings.

If desired, the device may be used for self-teaching drawing, as will appear more fully hereinafter.

In the accompanying drawings, Figure 1 is a side view of a box having a side view of mechanism drawn thereon corresponding to the adjacent side mechanism contained within said box. Fig. 2 is a similar view from the opposite side. Fig. 3 is a similar view in plan. Fig. 4 is a similar view in end elevation; and Fig. 5 is an end view of the box, said end being removed so as to show the relative arrangement of the mechanism within the box.

Like letters of reference denote like parts throughout the several views.

Referring to the drawings by letter, A designates a box embodying my invention, either rectangular or having some of its sides inclined to adjacent sides. When the drawings to be made are mechanical, as shown in the accompanying illustrations of the device, the box should be rectangular in shape; but for other kinds of drawings some of the sides may be inclined or not at right angles to those adjacent.

The letter B indicates the object—in this case a piece of mechanism—the drawing of which is to be explained by written or printed instructions or by the teacher to the pupils under his direction.

Upon the side *a*, Fig. 2, of the box is a linear drawing C of a side view of the object B,

showing the sides of the wheels thereof. Upon the top *a'*, Fig. 3, of the box is similarly drawn a plan view of the object B, and upon the end *a''*, Fig. 4, at right angles to the sides *a*, is drawn an end view of said object. Of course all four sides may have drawings corresponding to the views of the object seen from four directions ninety degrees apart; but three views will be usually sufficient to fully explain the object, and will show the three dimensions of length, breadth, and thickness. The bottom of the box may also have a drawing on it, if desired, showing a reversed plan view of the object. If the box is supplied with inclined sides, as described, perspective views of the object may be drawn thereon. The box is of any suitable material to receive drawings, such as pasteboard, wood, &c., may be of any desired size, and may have drawn upon its surfaces views of more than one object. If desired, upon the sides of the box are written or printed details of the parts of the object and instructions how to make the views. These instructions, when there are three views on the box, are marked on the sides opposite those on which the views they explain are drawn. When there are more than three views on the box, the instructions are marked on the same sides as the views to which they pertain. The teacher, having a number of these boxes and the corresponding objects, can furnish one to each pupil, and having a number of pupils the boxes and objects can be passed in rotation from one to the other of the pupils, saving the teacher much time, work, and explanation, or he may use the boxes and objects in giving lessons to classes.

In teaching a beginner the drawing on top of the box, for instance, is first shown and the pupil directed to copy the same, being informed that every line represents a certain part of the device inside exactly beneath the line, and then the drawing on the side is shown the pupil, and similar instructions and explanations are given. After the pupil has studied awhile, the parts are removed in order to show what the lines represent. They are then replaced, and with a little study the drawing becomes perfectly clear. It will perhaps then be desirable to give the pupil an-



other box containing mechanism a little more complicated, and with but slight assistance he is enabled to understand the drawing.

The device, as can be readily seen, is simple, cheap, and eminently practicable. By the use of the said device or of several thereof, each showing views, as described, of different articles, a scholar or workman can teach himself drawing at home after working-  
 10 hours, as all the necessary instructions as to the use of the proper instruments and directions explanatory of the views can be marked on the sides of the box, as described.

It should be here stated that by having the  
 15 views—such as side views, plans, and sections—arranged upon the box and at right angles or other proper angles to each other a very much more rapid perception of the correctness of the views and their relation to  
 20 each other is gained by the student, as he sees them just as they stand in the machine or device portrayed. This makes self-teaching comparatively easy.

The fact that the device puts every view,  
 25 whether a plan, reverse plan, and side or end view, or a section, in its exact position in relation to the other views adds very greatly to the utility and consequently to the value of the device. This is obvious, as it saves the  
 30 student from mentally placing any view in proper relative position.

I do not desire to confine myself to a built-up box in the construction of the device, as by making the different views on separate  
 35 boards and giving printed directions how to put the boards together to show the views thereon in their proper positions the same result may be obtained.

By having a knockdown box so marked as  
 40 to be easily put together in a proper manner the device can be reduced in bulk for transportation and can be quickly set up when necessary.

The drawings may be made directly upon  
 45 the wood or may be made on any suitable material and secured to the sides of the box by cement, glue, paste, or other suitable material.

In the drawings illustrating my device I  
 50 have shown the mechanism supported within the box by means of transverse shafts and the sides of the box braced or supported by means of transverse rods, their ends screw-threaded to receive locking-nuts. In order

to avoid confusion and to secure perspicuity, 55 I have shown the protruding shafts, as well as the nuts, &c., in shaded lines, while the object proper is linear. These supports of course form no part of my invention, and have only been illustrated for the purpose of  
 60 showing one of the many means of supporting the contained object.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is— 65

1. In a device for teaching drawing, the combination, with a box, of mechanism arranged within said box, the latter having drawn upon its sides views of said mechanism corresponding to the position occupied  
 70 by the object or mechanism with relation to said views, substantially as set forth.

2. A box for the use of drawing-teachers, having four sides and top and bottom and having on any or on all of its sides views of an  
 75 object as seen from directions corresponding to the position occupied by the object within the box, and proper explanations of the views written or printed upon said box, substantially as specified. 80

3. A box for the use of drawing-teachers, having on two adjoining sides and its top views of a suitable object as seen from directions corresponding to said views and on the opposite sides and bottom suitable direc-  
 85 tions and instructions regarding the views, said directions and instructions being opposite the corresponding views, substantially as specified.

4. A device for teaching or self-teaching  
 90 mechanical or other kinds of drawing, which device consists of boards or plates of suitable material having views, such as plan, side, and end views, and sections of the article to be drawn inscribed upon them, and con-  
 95 structed so that they can be placed or set together in such way that the views will stand in relation to each other just as the plans, side, end, and sections stand in relation to each other in the machine or device, sub-  
 100 stantially as specified.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

NILS O. STARKS.

Witnesses:

A. E. PROUDFIT,  
 J. H. NICHOLS.