A. CUVELIER.

DRAWING APPARATUS.

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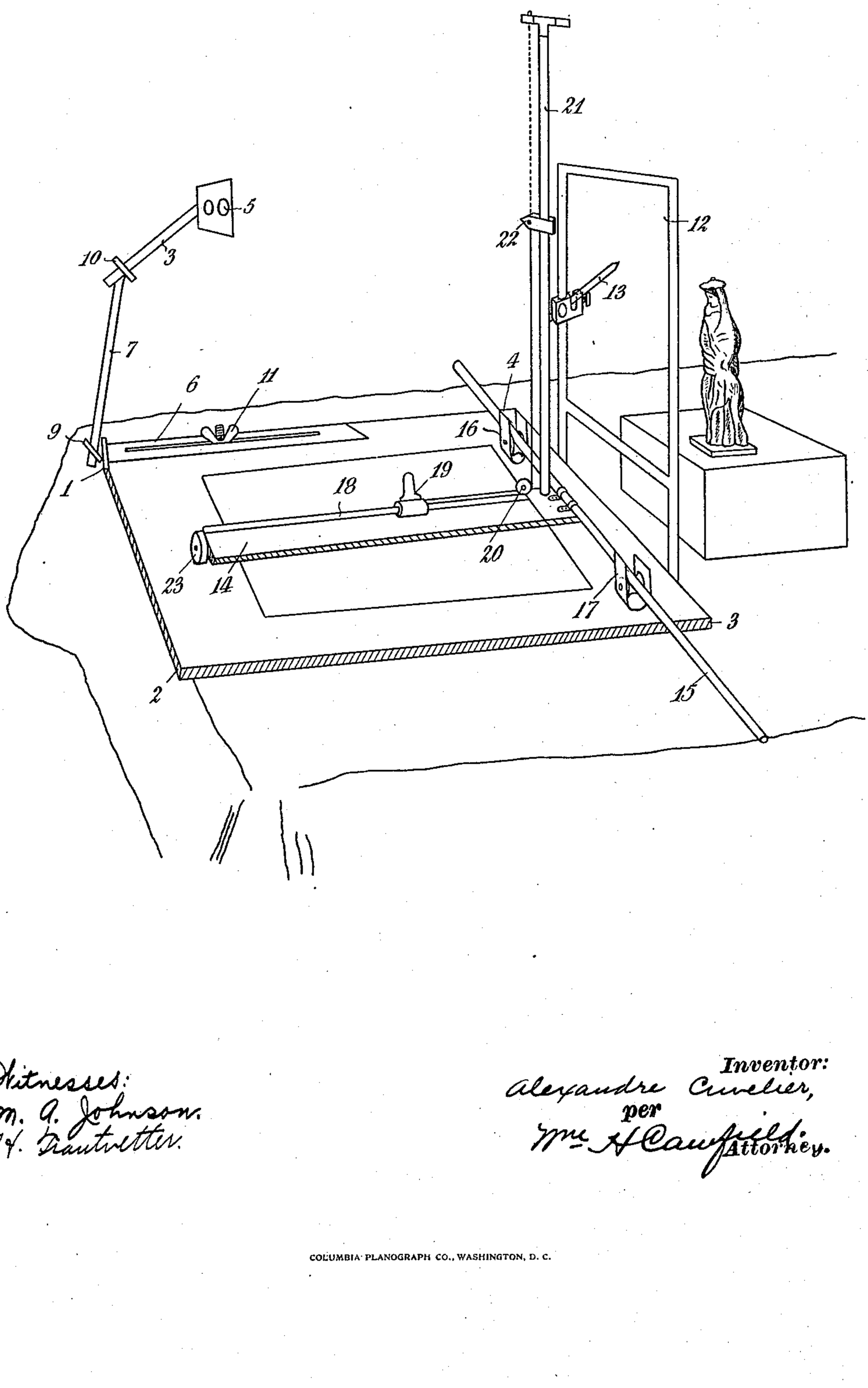
1,166,445. Patented Jan. 4, 1916.



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UNITED STATES PATENT OFFICE.

ALEXANDRE CUVELIER, OF PARIS, FRANCE.

DRAWING APPARATUS.

1,166,445. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed April 30, 1913. Serial No. 764,486.

To all whom it may concern:

Be it known that I, ALEXANDRE CUVELIER, a citizen of the Republic of France, residing at 37 Rue de l'Université, Paris, in the Republic of France, have invented new and useful Improvements in Drawing Apparatus, of which the following is a specification.

This invention relates to an apparatus which permits of drawing with absolute precision on a horizontal plane an object which is observed from a fixed point.

The apparatus, which has been called a scopograph (from the Greek skopein—to examine and graphein—to write), is easily constructed and the cost price is very small so that the apparatus is placed within the reach of everyone.

The accompanying drawing illustrates as a perspective view the invention set up in a position ready to be used for copying a small model.

The apparatus consists of four main parts as follows: The drawing table 1, 2, 3, 4, the eye plate 5 and its adjustable support 6—11, the pencil carrier 19 and its accessories 14, 21 and 22, and the frame 12 through which the object to be copied is observed.

An eye plate 5 is located at the front end of the table and is mounted on a pivoted support 6, 7, 8 which permits of longitudinal and lateral adjustments of the eye-plate is fixed by means of screws 9, 10, 11. This eye plate determines the position of the eye.

A vertical frame 12 is fixed to the table at the end opposite to that of the eye plate and serves for limiting the magnitude of the objects seen through the latter and capable of being reproduced by the apparatus. The frame is provided with a movable rod one end 13 of which serves as a point of orientation.

A flat ruler 14 is arranged horizontally on the table in front of the frame, the ruler being arranged at right angles to the frame. This ruler can only be moved from the left to the right and from the right to the left as it is fixed, at one end, to a horizontal rod 15 arranged parallel to the plane of the frame. The rod 15 passes through two guides 16 and 17 constituted by two small pulleys. This ruler is provided on its upper face, parallel to its length, with a rod 18 whereon a pencil-carrying-cursor 19 slides. At one end of the ruler a secondary pulley 20 the axis of which is parallel to the plane of the frame is mounted. At the same end of the ruler there is mounted a vertical rod 21 which ends in a crutch like formation and carries a rubber thread to which a cursor 22 is suspended. The cursor 22 is connected to the pencil-carrying-cursor 19 by means of a thread passing under the secondary pulley 20. A roller 23 for facilitating the reciprocating movements of the ruler is mounted on the ruler.

A movement of the pencil-carrying cursor 19 to the left in the figure along its guide rod 18 will thus cause a movement of the cursor 22 downward, causing a tensioning of the rubber thread; and a movement of the cursor 19 back along its guide will cause the rubber thread to retract and raise the cursor 22.

It will be observed that the pencil carried by the cursor 19 may be brought into contact with any point on the drawing paper because it may receive displacements in two directions at right angles, namely in the direction of the length of the ruler 14 and also in the direction at right angles to the length of the ruler when the latter rolls across the paper. Every movement of the pencil-carrying cursor 19 causes a corresponding movement of the cursor 22 either vertically on its guide 21 or transversely in front of the frame 12 by the movement of rod 21 caused by rolling the ruler 14, or by a combination of these two movements.

The rods are preferably of steel and may fit into aluminium tubes and are capable of being easily dismantled.

The operation of the apparatus will be easily understood. The paper is first properly fixed on the table and the pencil is fastened in the pencil-carrying-cursor, in such a manner that its point is adapted to touch the paper when the cursor is tilted to the left and to be removed therefrom when it is tilted to the right. The pencil is held between the thumb and the first finger, resting it lightly on the paper to draw. The pencil may be moved without drawing a line, it is lifted by pressing the cursor to the right by means of the second finger. Having located the eye plate in a manner suitable for seeing in the frame the whole of the objects which it is desired to draw, conforming with the distance to the rules of perspective drawing, the eye is placed in front of the eye plate, the farthest point is aimed at and should be

easily visible from the center, this point being covered by the end of the movable rod 13. When the end of the rod 13 does not cover the far point first aimed at the eye has moved. It is necessary that the eye should be kept in the position first chosen, otherwise a distortion of the drawing will occur because the exploring cursor 22 will take up positions which are not in the same relation to one another as the corresponding points on the object to be copied. From time to time while drawing the position of the eye should be tried by observing the far point and seeing that it is still covered by the end of the rod 13. The habit is readily assimilated.

By appropriate movements of the hand holding the pencil the point of the cursor 22 is caused to describe all the lines necessary for the graphic reproduction of what is seen, these lines are simultaneously drawn on the paper by the pencil.

In order that the apparatus should give good results the rod 15 must be at right angles to the ruler 14 and the rod 21 must be vertical.

As its name indicates, the scopograph combines seeing and drawing into one action. It can be practised by anybody after a few hours of exercise. Its applications which are very numerous, very important and manifold comprise: study of perspective drawing, study of drawing; reproduction of pictures, drawings, plans—their reduction to a given scale; drawings at a given scale of any objects for catalogues; reproduction of stereoscopic views, topographic views, etc.

What I claim and desire to secure by Letters Patent of the United States is:—

1. In an apparatus for drawing with precision what is seen from a fixed point the combination of an adjustable eye plate, an observation frame located opposite to said eye-plate and an adjustable pointer carried on said frame substantially as described.

2. In an apparatus for drawing with precision what is seen from a fixed point, the combination of a drawing board, a ruler adapted only to move transversely to its length, an upright rod attached to one end of said ruler, a cursor carried by said rod, a tension member attached to said cursor and to the top of said rod, a guide member attached to said ruler, a pencil-cursor sliding on said guide member, means connecting the pencil-cursor to the aforesaid cursor adapted to move the same when the pencil is moved, an eye plate, adjustable means connecting said eyeplate to the aforesaid board, and a rectangular frame also attached to said board and carrying an adjustable arm or pointer for the purpose specified, all substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALEXANDRE CUVELIER. [L. S.]

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