

(No Model.)

T. C. HAILES.
DRAWING APPARATUS.

No. 574,605.

Patented Jan. 5, 1897.

FIG. 1.

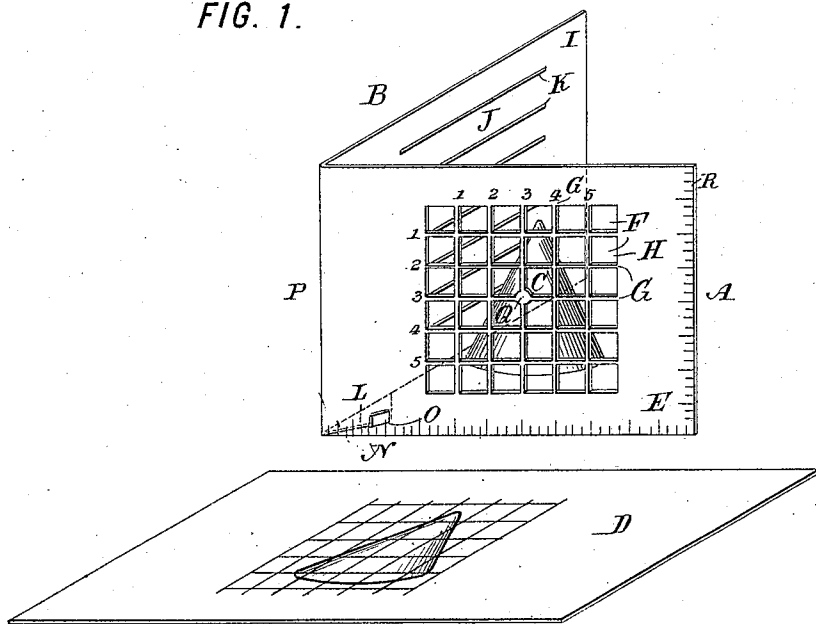
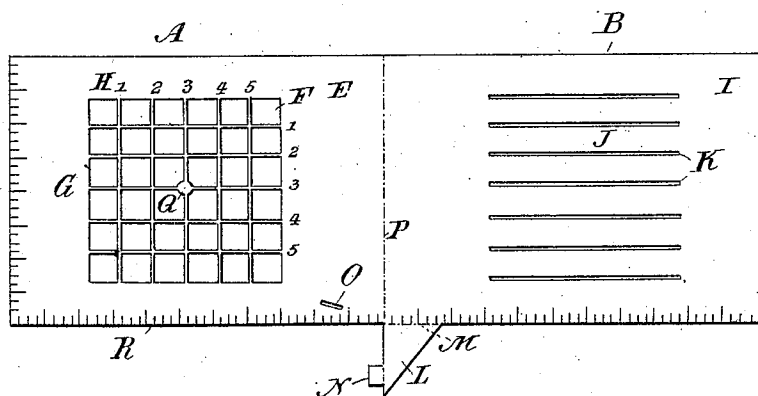


FIG. 2



WITNESSES:

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UNITED STATES PATENT OFFICE.

THEODORE C. HAILES, OF ALBANY, NEW YORK.

DRAWING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 574,605, dated January 5, 1897.

Application filed March 16, 1894. Serial No. 503,842. (No model.)

To all whom it may concern:

Be it known that I, THEODORE C. HAILES, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Drawing Apparatus, of which the following is a specification.

This invention relates to apparatus for facilitating drawing, and aims to provide an improved apparatus of this character.

Heretofore many devices have been employed to assist in fixing and reproducing the impression which the eye receives of real objects. Such apparatus is particularly employed in connection with the simpler forms of perspective drawing and is especially adapted to the use of scholars.

In the apparatus heretofore employed a series of parallel cross-lines have been arranged on a frame or drawn on a transparent sheet in such manner that the object to be drawn could be viewed through this series of lines, and the user by noting the particular lines crossed by each point in the outline of the object and employing a drawing-paper having similar cross-lines could readily reproduce on the latter the exact outline of the image seen in the plane of the cross-lines.

My invention relates especially to apparatus of this character. In carrying out my improvement in such apparatus I preferably employ a thin flexible flat sheet having a space traversed by a series of cross-lines, preferably formed by strips integral with the material of the sheet, through which space the object to be drawn may be viewed, and I provide a marker, preferably consisting of another and similar sheet traversed by slots parallel and of equal spacings to that between the parallel series of the cross-lines and of a length and height corresponding to the cross-line space in the first-mentioned sheet, by means of which marker the user can readily rule any sheet of paper with squares identical with the cross-lines and thus be enabled to obtain upon the paper, in drawing the object seen through the cross-lines, a representation of such object corresponding exactly to the impression thereof on the plane occupied by the cross-line. Preferably both these sheets are formed of paper or other thin flat flexible material, and the one is connected to the other to fold there-

against either by a hinge-joint or by constructing the two as an integral sheet folded upon itself. Preferably a brace is provided consisting of an integral slot on one part engaging a notch in the other part to maintain the parts in the proper relative position.

In the accompanying drawings, which illustrate the preferred form of my invention, Figure 1 is a perspective view of my improved apparatus in the position for use; and Fig. 2 is a plan view of the apparatus, all the flaps of the sheet being unfolded and in the same plane.

Referring to the drawings, let A indicate the cross-lined member, and B the marker.

C indicates the object to be drawn, and D a sheet of paper containing a drawing of this object.

The member A is preferably a thin flat piece of flexible material having a solid border portion E surrounding its exterior in the manner of a frame and an inner visual space F, through which the object to be drawn is viewed, which space is traversed by a plurality of cross-lines of equal separation.

The cross-lines (lettered G) are preferably constructed from the material of the sheet itself, being formed by punching out the squares H between the lines, thus bringing the latter within the thickness of the material of which the sheet is formed, so that the cross-lines and their connection with the border E at no point project beyond the planes of the respective surfaces of said sheet.

The marker B, I also prefer to construct of a flat sheet of thin flexible material, as paper, and of the same size and dimensions as the sheet A. It is provided with a surrounding border portion I and a slotted inner portion J, traversed by a plurality of parallel slots K, having rectilinear edges and serving as ruler edges for the point of a pencil drawn through the slots. The length of the slots preferably corresponds to the corresponding dimension of the space F of the member A, and the height of the space J corresponds to the corresponding dimension of the space F, preferably both spaces being square. The grooves K are spaced the same distance apart as the lines G, with which they correspond in number.

Preferably the member A and marker B

are connected movably together and constructed to fold one against the other. This is best accomplished by constructing the two in the form of a single integral sheet folded at its middle, the one flap serving as the member and the other as the marker.

To prevent relative displacement of the two parts during use, I provide a brace L on the one for engaging the other. This in the construction shown consists of a short flap L, projecting from the lower edge of the marker, forming an integral part thereof and connected thereto by a fold M, on which it can be swung, or folded toward or from the border of this sheet. This brace has a nose N, which engages a slot or equivalent provision O on the member A when the latter is in proper position relative to the marker to be used in drawing. This is usually a position in which the parts stand at right angles. When the apparatus is not in use, the two flaps can be folded against one another, with the brace-flap L folded between them or against the external side of either.

The fold or hinge (lettered P) between the member A and marker B and also the fold or hinge (lettered M) between the marker B and brace-flap L are preferably each constructed to permit the folding of the flaps in either direction, so that, when desired, the marker can be turned at rear of the member A, as shown, or in the opposite position relatively thereto.

In operation the member A is placed in proper position upright before the object to be drawn, and at such distance between the eye and this object as shall give the desired reduction of the latter as it is represented on the cross-lines. Drawing-paper which has been previously cross-lined in any manner, as by placing the marker B thereon and ruling lines corresponding with its slots in one direction and then turning the marker at right angles and ruling cross-lines in the other direction, is then placed in any convenient position, and the user observes the particular points on the cross-line at which the outlines of the object appear, whereupon by marking the corresponding outlines at the corresponding cross-lines on the paper he obtains thereon a true drawing of the object. If the lines on the paper are drawn with the marker B, having lines of like separation to those of the member A, the drawing obtained will be of the

same size as the representation of the image on the cross-lines of the latter member. An enlargement or reduction of this representation can be obtained by widening or narrowing the interlinear spaces or by moving the member A toward or from the object to be drawn.

When the apparatus is not in use, it can be folded into a flat form, and, if desired, can be rolled into a compact roll.

It will be seen that my invention provides an improved drawing apparatus of simple construction which can be conveniently and effectively used for object-drawing and which can be made at a very small cost.

It will be understood that the invention is not limited to the precise details of construction and arrangement set forth and shown as its preferred form, since it may be modified in certain respects, as circumstances or the judgment of those skilled in the art may dictate, without departing from its essential features.

The central intersection of the cross-lines G is made prominent in any suitable way, as by forming the enlargement or spot Q there, to be used as a sighting-point or "finder" for locating the object when drawing. To further facilitate noting any particular lines, the series of lines are numbered.

Preferably a scale R is provided on one side edge of the member A and across the bottom edges of the members A and B, and this scale and the numbers for the cross-lines are duplicated on each side of the members.

What I claim in drawing apparatus are the following-defined features and combinations, substantially as hereinbefore set forth, namely:

In drawing apparatus, a member A, having cross-lines, in combination with a marker B, having a plurality of slots K having ruling edges, said marker connected to said member by a folding connection, and a brace L between said members, substantially as and for the purpose set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

THEODORE C. HAILES.

Witnesses:

CHARLES M. FRIEND,
JOHN E. LYONS.