March 22, 1927. 1,622,229

P. L. ORMISTON

DRAWING APPARATUS

Filed Dec. 23, 1925

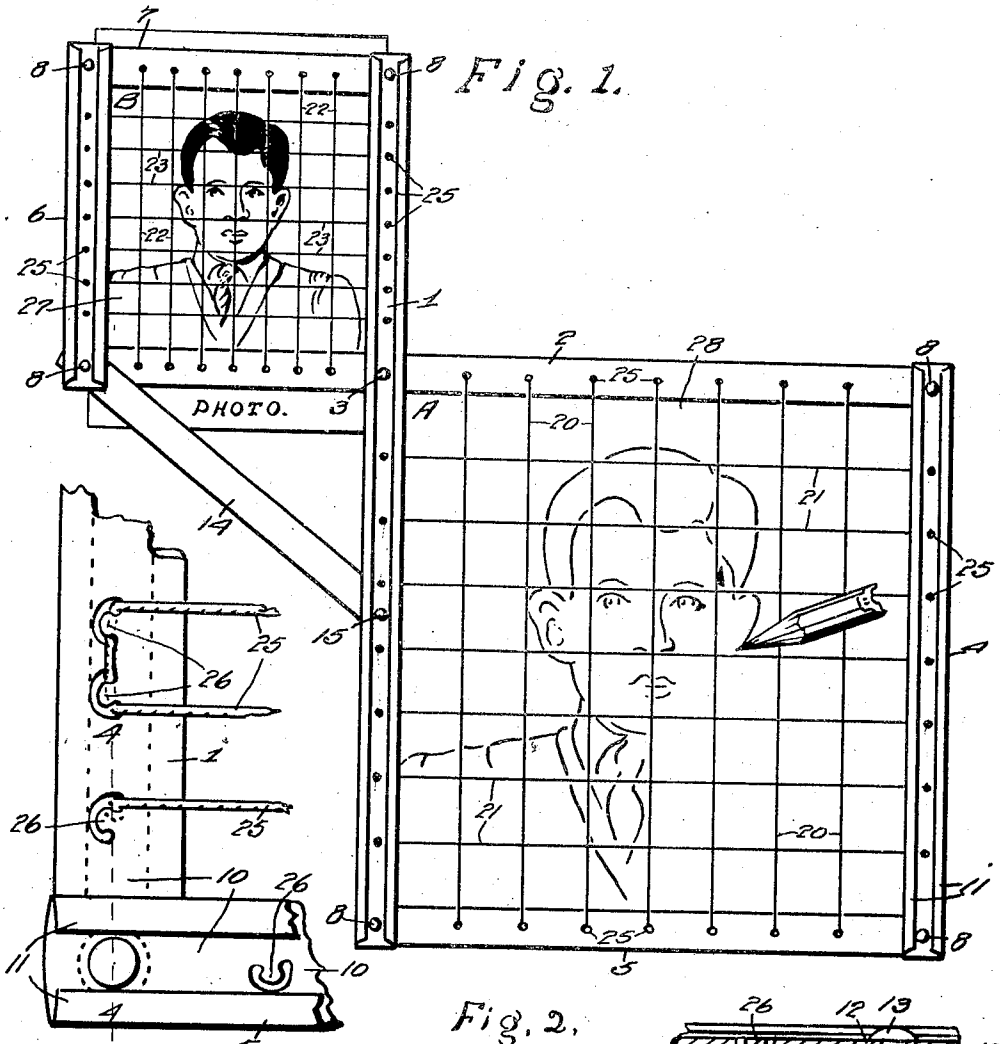


Fig. 1.

Fig. 2.

Fig. 3.

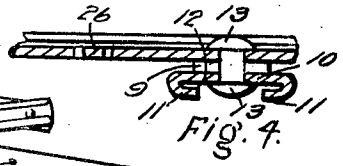
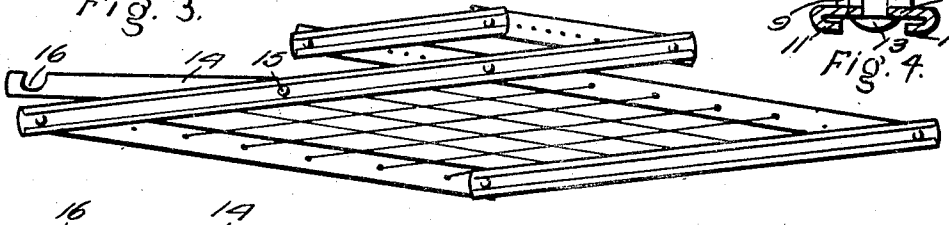


Fig. 4.



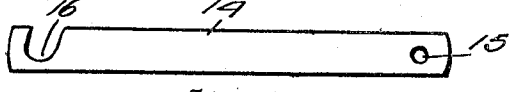


Fig. 5.

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DRAWING APPARATUS.

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This invention relates to improvements in drawing apparatus.

The object of my invention is the provision of devices for the use of students in drawing and artists in outlining or transferring of the main structural features of a drawing, photograph, print, or the like upon a larger or upon a smaller scale.

A further object of the invention is to provide an apparatus of the class described having a frame provided with two enclosed, rectangular transcribing areas of predetermined relative scale, each crossed rectangularly with a plurality of flexible filaments delimiting said areas into equally numbered spaces having the same relative scale as said areas whereby a drawing positioned under either of said assemblage of filaments may be readily transferred as to its main features to a paper similarly placed under the other filaments to obtain either an enlarged or reduced scale copy.

A still further object of the invention is to produce a device of the character stated which will be simple and practicable in construction, may be collapsed into small compass when not in use, and which will be comparatively inexpensive to manufacture.

Other objects and advantages residing in my invention, and objects relating to details of construction and arrangement of parts will be readily apparent in the course of the detailed description to follow.

The accompanying drawings illustrate by way of example one form of the invention, in which:

Figure 1 is a plan view of drawing apparatus embodying my invention illustrated as in use.

Fig. 2 is a plan view of the apparatus shown in collapsed condition.

Fig. 3 is a view in plan upon an enlarged scale of a corner detail of the invention showing a slightly modified form of the filament securing devices.

Fig. 4 is a view in section on line 4—4 of Fig. 3.

Fig. 5 is a detached view in plan of the frame latching-bar.

Referring to said views, in which similar parts in the several views are indicated by like reference characters, and referring particularly to Fig. 1 wherein my apparatus is shown in operative condition, the reference characters A and B indicate, generally, the larger and smaller frame-parts, respectively, comprising my improved apparatus. A bar 1 extends relatively perpendicular in a horizontal plane from the operator's position and bounds the left hand side and the right hand side of the areas comprised within said frame-parts, respectively. A bar 2 extends transversely to the bar 1 and is pivotally connected thereto at 3 bounding the respective said areas upon their upper and lower edges.

The frame-part A is completed upon its remaining two sides by shorter bars 4 and 5 opposite to and parallel with, respectively, the bars 1 and 2. The frame-part B is similarly completed upon its remaining two sides by short bars 6 and 7 opposite to and parallel with, respectively, the bars 1 and 2. Said bars are connected at their corner intersections by pivotal connections 8. Relatively thin washers 9 are desirably positioned about said pivots and between the bars.

Said bars are preferably made of sheet-metal and are each formed with a medially disposed body 10 with marginal flanges 11 upon their opposite sides turned inwardly over the body to provide a longitudinal groove 12 upon the outer side of each bar in which the heads 13 of the rivets forming said pivotal connections are positioned to lie wholly below the flanges 11. With the flanged side of said bars directed outwardly as described the opposite smooth sides of the bars are in juxtaposition as spaced apart by the washers 9.

To maintain said frame in rectangular, operative position a brace-bar 14 of flat construction is pivotally connected at one end, as at 15, to the frame-bar 1 intermediate the pivot 3 and its connection with the bar 6 and is formed at its opposite end with a hooked recess 16 adapted to be detachably engaged about the pivotal connection 8′ between the frame-bars 2 and 6, or the washer therebetween, thus extending in diagonal directions as a brace and tie-bar to secure the frame in its workable position, as shown in Fig. 1.

Said frame-part A is strung with a plurality of flexible filaments 20 connected to the frame-bars 2 and 5 and extending parallel with the bars 1 and 4 with equal spacings therebetween. Said filaments may be formed of cords, metallic wires, as deemed suitable. Similar cords or wires 21 are strung from the bars 1 and 4 in rectangular relation to the wires 20 and parallel to the bars 2 and 5. The spaces between the

said wires and between the wires and the adjacent bars are square and of equal dimensions.

The frame-part B is similarly provided with oppositely disposed wires 22 and 23 in evenly spaced relation and of the same number as in the part A. The wires 22 and 23 are set closer together, desirably in a predetermined relative scale to those in part A, that is to say, upon a scale of one-half or one-third according to the ratio of enlargement or reduction desired.

Said wires are not interwoven but lie in relatively horizontal planes. They may be threaded through spaced holes 25 in the frame-bars, as indicated in Figs. 1 and 2, secured under and about tongues 26, formed in the frame-bars, as seen in Figs. 3 and 4, or by any other approved method.

When constructed in accordance with the foregoing description and drawings the apparatus is collapsible and will fold into small compass, as seen in Fig. 2. The brace-bar 14 is unhooked from its connection with the corner pivot 8′ whereupon by exerting a corner-wise pressure upon it the frame will bend upon its pivots with the oppositely disposed bars maintaining their parallel relation so that the wires will retain their tension and adjust themselves to their changed positions. The parallel frame-bars running in one direction are set back to back to the bars extending in a transverse direction so that the outer plane body-portion 10 of each bar is opposed to the corresponding side of the other attached bars and with the washers 9 therebetween the bars will fold together with no noticeable friction.

The manner of utilizing the apparatus will be clearly understood from the foregoing in connection with the drawings, particularly Fig. 1 wherein a photo-print 27 is shown mounted symmetrically under the wires in frame-part B and a sheet of paper 28 is shown placed under the wires of the part A whereby an enlarged-scale transference of the subject matter of the print may be readily made.

The intersections of the various wires with the outline of the picture as observed by the artist are noted and transferred by pencil to the paper 28 at the same relative points upon the corresponding wires of the other frame-part. The outline and any other features desired may thus be transferred to the copy paper to obtain as correct a resemblance as the care or skill of the artist will admit. The detail of the picture may also be filled in if desired while in place as the flexibility of the wires or cords will admit them to be readily deflected to one side under the gentle pressure of the pencil as the artist follows the observed line.

In the event that a reduced copy is desired the print to be copied is placed under the wires of the frame-part A and the copy is made under the part B, as will be well understood.

The invention is very simple and economical of construction and is adapted particularly to the use of students of drawing to obtain facility in the blocking in of a drawing and in fixing the main structural features of the work to be copied. In the hands of a competent teacher the student should make rapid progress wtih the assistance of this apparatus, as in the early stages of its use the entire picture may be transferred to the copy by its means and guidance. By easy stages the aid obtained from the instrument may be eliminated until only the most salient features are blocked in and the picture finished without its use. As the eye of the student becomes more sure the use of the apparatus may be discarded entirely.

For practical use the apparatus is meritorious in the copy of pictures as no especial preparation of the picture or of the copy paper is required. No lines are made on either picture or copy to disfigure the same.

From the foregoing description taken in connection with the accompanying drawings the advantages of the construction and operation of my drawing apparatus will be readily apparent, but, while I have described the principle of operation of the invention, together with the device which I now consider to be the best embodiment thereof, it will be understood that the structure shown is merely illustrative and that such changes may be made therein as are within the scope of the following claims.

Having described my invention, what I claim, is:—

1. A drawing apparatus, consisting in a rectangular frame enclosing two areas of unequal dimensions, and a plurality of filaments secured to said frame extending over each said area in equal number in oppositely transverse directions providing rectangular corresponding spaces between the filaments of the two areas of equal number and of unequal dimensions.

2. A drawing apparatus, consisting in a frame pivotally jointed at its corners and intersections enclosing two rectangular areas, filaments mounted in said frame extending across each said area at right angles to the sides to which they are connected and in parallel with the adjoining sides of the area, and means to maintain said frame in rectangular relation.

3. A drawing apparatus, consisting in a frame enclosing two rectangular areas of unequal dimensions, two of the frame-bars intersecting each other and each forming a side of both of said areas, and a plu-

rality of filaments secured to said frame extending over each said area in equal number in oppositely transverse directions providing rectangular corresponding spaces between the filaments of the two areas of equal number and of unequal dimensions.

4. A drawing apparatus, consisting in two frame-parts of unequal rectangular configuration, two of the frame-bars being continuous and each forming a side-bar of each said frame-parts, and a plurality of evenly spaced crossed wires in each said frame-part affording rectangular corresponding spaces of equal number and unequal dimensions in the respective frame-parts.

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