

# **MANUAL OF PRACTICAL DRAUGHTING**

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Manual of Practical Draughting by Anonymous

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**ANONYMOUS**

**MANUAL OF  
PRACTICAL  
DRAUGHTING**



**MANUAL**

...OF...

**Practical Draughting**

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**For Students in Industrial Schools and Schools  
of Science, Practical Draughtsmen,  
Engineers and Artisans**

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**QUEEN & CO., INC.**

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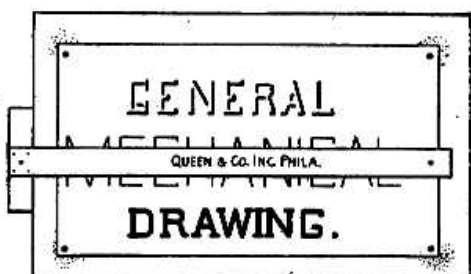
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## INTRODUCTION.

The use of this book pre-supposes a knowledge of the elements of geometrical and mechanical drawing, and is intended to be used by those who desire to prepare, in addition to their ordinary work, drawings of artistic excellence. Very much of the work turned out in schools and colleges by students of mechanical, civil and mining engineering is of a character not at all suited to the needs of practical men, because they are not taught how to finish their work properly; instruction of this kind, if given when a class commences their technical work, will go very far toward holding their attention in their studies. It is accepted by nearly all teachers that the time spent at work in the drawing room amply repays itself in after years; and if to the ability to design is added the ability to make accurate and artistic drawings, the education of the engineer is nearly complete.

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## SECTION I.

### Instruments, Apparatus and Some Methods.

**M**ECHANICAL DRAWING is the most general kind employed for technical work, and, as such, engages our attention first. As a matter of fact, it is made use of to delineate all forms of apparatus, appliances, machinery, buildings, etc.; the principles of drawing these various objects is, in each case, the same.

The draughtsman's outfit may be either simple or elaborate, and good work may be done with simple tools. It is, of course, necessary that **drawing boards** be on hand, and the simpler in

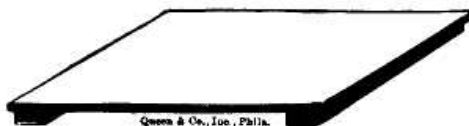
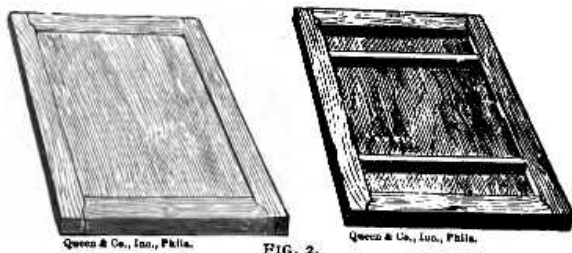


FIG. 1.

construction they are the better. No better board can be had than a plain white pine or poplar surface, properly glued together (if the size of the board demands it) and held plane by means of two strong oak or other hardwood cleats, screwed to the back. It is a mistake to have heavy boards; one of 24 x 30 inches, made of  $\frac{5}{8}$ -inch material, well cleated and cut



and planed as nearly square as possible, will last a very long while. It is absurd to attempt to make all the edges of a board exactly  $90^\circ$  with each other. If *one* edge is cut and planed straight and smooth, drawings of the highest grade and quality can be made. Even this one edge is not an *absolute* necessity.



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FIG. 2.

Queco &amp; Co., Inc., Phila.

The author has frequently made complex mechanical drawings, finished them completely in colors with pen shading in ink, by merely tacking the drawing paper to no other surface or board than the top of an ordinary extension dining table.

**Panel Boards** are useful for some purposes (particularly those of large size, which are excellent for stretching parchment for illumination or engrossing), but as the frames give

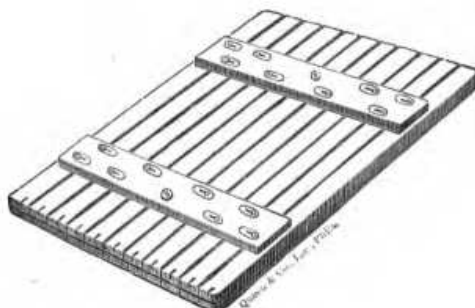


FIG. 3.

out so easily they are not to be recommended for general use. For small drawings, which are to be highly finished in colors, or ink and colors, they answer admirably. Elaborate boards

made up of a large number of strips of pine wood, glued lengthwise, are good. Plain boards, with tongued and grooved edges, are useful, but offer no advantage over the board first mentioned with cleats. The Bergner frame, carrying a parallel moving straight edge and so made that light panels or boards can be inserted, each with its own paper attached, seems very valuable for serial drawings of the same scale. The easel or

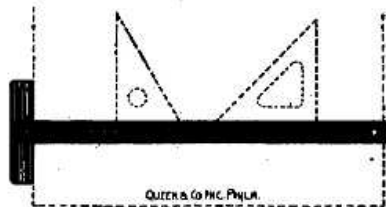


FIG. 4.

drawing-board support of the same inventor is a novel means to hold the board vertical or nearly so, but it is an expensive luxury.

Of Squares, a good, plain T-square is a necessity; and personally, the preference is given those made wholly of wood, for it is found in practice that the lighter in weight the square is, the more readily it can be handled on the board. Squares with a shifting head are extremely useful, and if it is possible to purchase one with a flat swivel-nut do so (Fig. 5). Ordinarily they are made with a milled nut-head projecting about an inch

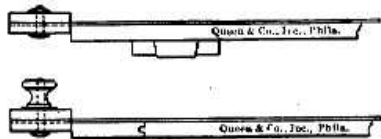


FIG. 5.

above the shifting part, and it is quite inconvenient. If possible, have two squares, large and small, to accommodate the several sized boards in use. Drawings upon very large boards can be made equally well with a four-foot straight edge, without the necessity of having a very long square. For the small boards, the blade of the square can well be of hard rubber. Of recent

years, considerable use has been made of a kind of transparent material for squares, triangles, etc., and it is found to be excellent for the purpose. By its use in T-square blades, the

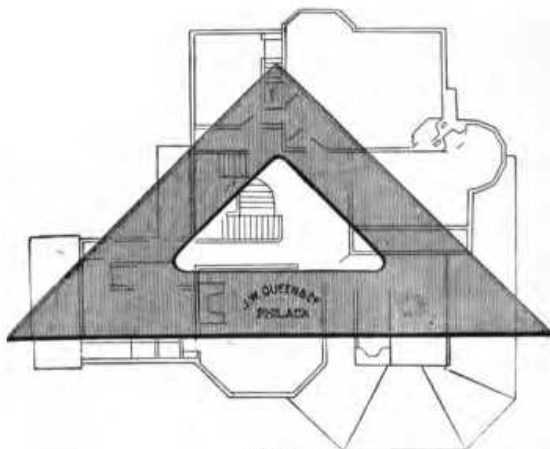


FIG. 6.

draughtsman is enabled to see the work which would otherwise be hidden from view. Always hang the squares up when they are not in use, but not in such a position that direct sunlight will fall upon them, as they will become irreparably



FIG. 7.

warped, but they can with safety be left lying flat upon the drawing; but it is bad policy to stand them up against a wall or leaning against the drawing table.

**Triangles** can be of wood, hard rubber or celluloid; the latter are the best. Very small triangles, *e. g.*, 2-inch, are a