

**HOW TO MAKE PATENT
DRAWINGS, A BRIEF TREATISE ON
PATENT DRAFTING FOR THE USE
OF STUDENTS, DRAFTSMEN AND
INVENTORS**

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How to Make Patent Drawings, a Brief Treatise on Patent Drafting for the Use of Students,
Draftsmen and Inventors by L. H. Fulmer

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PREFACE

A great many books have been written on drawing, both mechanical and architectural, but to my knowledge very few, if any, have ever given information in regard to the making of Patent drawings, excepting of course the U. S. "Rules of Practice." In this progressive period, when there are so many inventions being discovered and so many patents being secured to protect the same, there is naturally a demand for good Patent Draftsmen. As every patent issued requires drawings, and the U. S. Patent Office will accept only drawings which are made by men skilled in the art, and made under certain rules, I think that a book disclosing information on this subject will be very useful, not only to the man wishing to fit himself to hold a position as draftsman, but also to the inventor who desires to make his own drawings, either to save himself the expense, or because he is so located as to be unable to secure the services of a good man.

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CONTENTS

PREFACE

CHAPTER	PAGE
I. Instruments and Materials	5
II. Use of Instruments	13
III. Penciling the Drawing	18
IV. Inking the Drawing	25
V. Sections and Section Lining	28
VI. Outline Shading	31
VII. Surface Shading	34
VIII. Lettering the Drawing	36
IX. Sketching	37
X. Care of Instruments	39
XI. Blue Printing, etc.	41
XII. Useful Hints	43

CHAPTER I

INSTRUMENTS AND MATERIALS

Introduction.—In this chapter I have listed instruments and materials necessary to make a first class Patent drawing, and they should be secured before attempting any work. They can be purchased at most Art stores, or if desired, can be ordered through the mail from firms dealing exclusively in draftsman's supplies. To the man just starting this work the instruments may seem an expensive investment, but if good instruments are bought this is not so, as they will last a lifetime, and the draftsman is always sure of securing the best results in his work. The beginner should never hinder himself by using instruments of an inferior grade, as the accuracy and speed of patent drawings as well as the finish depends to a great extent on the quality of the instruments.

The instruments and materials I have divided into two lists, the first consisting of those which are absolutely necessary, and the second those not necessary but good to have for certain work.

The first list consists of drawing board, drawing paper, thumb tacks, pencil, ink, erasers (pencil and ink), tee-square, 30° and 45° triangles, scale, irregular curve, compass (with pen and pencil point, and lengthening bar), dividers, bow dividers, bow pencil, bow pen, and ruling pen (medium size).

In Plate 1 (2) illustrates drawing board, (3) drawing paper, (4) thumb tack, (5) 45° triangle, (6) 30° triangle, and (7) tee-square.

The second list consists of proportional dividers, erasing shield, crow quill pen, transfer sheet, stylus, pencil pointer, burnisher, cleaning eraser, and a small ruling pen.

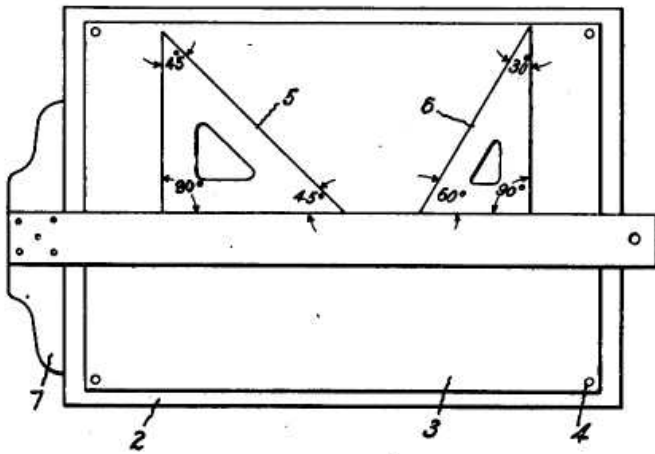


PLATE 1

Drawing Board.—The drawing board is a rectangular board on which is fastened the paper. Usually it is made of white pine about $\frac{3}{4}$ " or $\frac{7}{8}$ " thick, and with the grain running the long ways of the board. The most convenient size for patent work is 13" x 18". It must never be less than $10\frac{1}{2}$ " x $15\frac{1}{2}$ ". The front face, that is, the working surface, should be smooth and perfectly flat. The four edges of the board should form a perfect rectangle, or at least the adjacent edges at the lower left hand corner should be at right angles to each other. It is generally used with the short sides at top and bottom.

Drawing Paper.—The paper must be pure white with a smooth calendered surface and must have a thickness to equal three-ply Bristol board. Of course the better the quality the more easily erasures may be made. The size of the sheets must be 10" x 15". For patent work I recommend Reynolds Bristol board of three ply, which comes in sheets about $12\frac{3}{8}$ " x $15\frac{1}{4}$ ", allowing a margin outside the cutting lines of the drawing on which you can try your pens when inking. Patent firms usually furnish their workmen with paper.

Thumb Tacks.—Thumb tacks are used to fasten the sheet of paper to the drawing board. Those made of one piece of hard steel with a flat head and fine needle point are the best. They are very inexpensive and a dozen of the best quality should be secured.

Pencil.—The drawing pencil for laying out all drawings should be of good quality; not too hard as it will make indentures in the surface of the paper, and in case of an erasure cannot be removed; nor should it be too soft, as it will wear away quickly and it would be impossible to secure sharp lines. I recommend a pencil of HHHH hardness. This should be sharpened to a long conical point secured by holding the lead at an angle to a piece of sandpaper or emery cloth and drawing it back and forth at the same time revolving the same. While pencilling the drawing the point should be watched and when it becomes rounded or blunt should be touched up on the sandpaper.

The pencil should be held vertical or nearly so and should be pressed on the paper lightly. If inclined at all it should be in the direction in which it is moved.

Ink.—India waterproof ink is the best for this work, and I recommend that put on the market by Higgins. This ink flows freely and presents a perfectly black line. It comes in a bottle with a short quill in the

stopper. By means of this quill ink is easily placed between the blades of the pens and compasses. Be sure before using to shake the bottle well as it will settle and is liable to be thick near the bottom. If it should become too thick to flow properly it can be thinned by adding a few drops of ammonia.

Erasers.—For a pencil eraser a soft pliable rubber should be used. Do not bear on the paper but rub softly. Pressure on the rubber does not remove the line any sooner.

For ink eraser, use a stiff rubber with very little grit in it. For most work a pencil eraser will answer the purpose. It will take a little longer, but the surface of the paper will not be injured as it might by a hard pressure on the ink eraser.

Tee-Square.—The tee-square is used as an edge on which to draw horizontal lines; and as a surface to place the triangles against for drawing straight lines in oblique and vertical directions. This instrument derives its name from its shape which is that of the letter "T." It consists of two parts: the blade, and the stock. The horizontal part of the letter "T" is the stock and the vertical part the blade. They are joined together at right angles to one another. The stock is placed against the working edge of the board and the lines are drawn along the edge of the blade. The tee-square for this work should be 18" long and preferably of wood with celluloid edges.

To use, grasp the tee-square near the center of head with the left hand, and slide the inner edge of the head against the edge of the board, always making sure the edge is in perfect contact, otherwise the lines would not be parallel.

30° and 45° Triangles.—Triangles are used as a guide for the pencil or ruling pen in drawing lines at