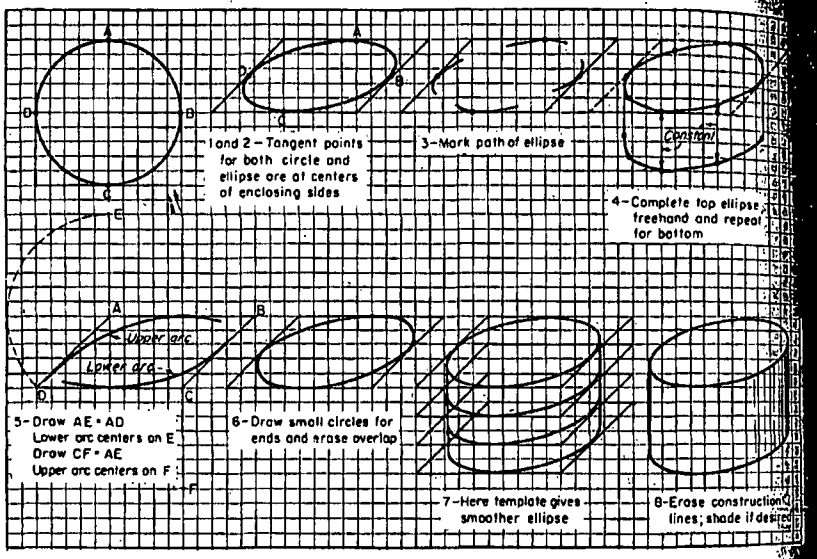


HEADWORK

PHIL SWAIN BRINGS ENGINEERING THEORY DOWN TO EARTH



Easy Sketching System—8

► Every rose has a thorn, so there is one minor nuisance you may encounter even with cabinet projection.

You won't always be able to draw circles with a compass because you can't always arrange to have the circle face you. When the circle to be pictured is on the top or sides, it appears as an ellipse. Remember, the oblique view of a circle in a square is an ellipse in a diamond. To avoid confusion always draw the diamond first, then fit the ellipse into it.

Four ways to draw the ellipse are: (1) Trace it freehand by eye. (2) Plot the four tangent points of ellipse, then draw it in freehand. (3) Approximate ellipse with four circular arcs. (4) Use ellipse templates.

Templates give the best-looking job with the least effort. Their use will be described next month. This month we show what to do if and when you have no template handy.

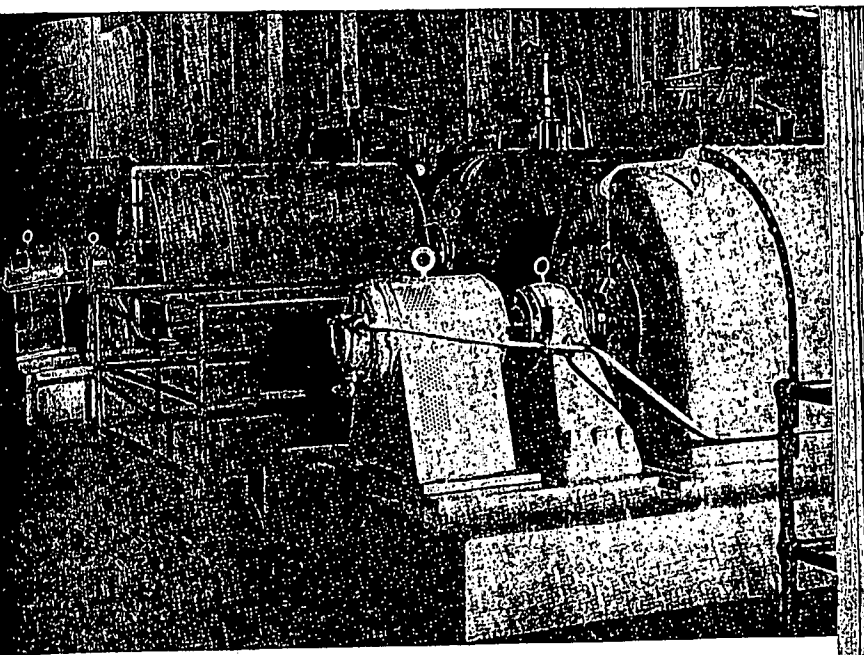
First, note circle in Fig. 1 is tangent to the square at center of each side. The same must hold true for the ellipse in the diamond, Fig. 2. Side centers *A*, *B*, *C* and *D* are tangent points.

For a freehand sketch of the ellipse, first indicate the trend of the curve at tangent points, Fig. 3. Then, Fig. 4, complete ellipse freehand by eye. Fig. 4 shows how to expand this into a sketch of a tank. For the near bottom edge, merely repeat (drop down) the near edge of top ellipse.

If you want a smoother job, take an ellipse with a compass. First, Fig. 5, strike the two big arcs. Then, Fig. 6, draw small-radius arcs tangent to big arcs at each end. Erase overlap.

Fig. 7 was drawn with ellipse templates—cleaner curve with less work. Fig. 8 shows application to a tank.

Note: *Next two lessons will be devoted largely to exercises using ellipse templates. You will need specially-cut ellipses ("25-deg slant"). We suggest Dietzgen Truway ellipse templates from drafting stores, or direct from Eugene Dietzgen Co, 218 E 23rd St, New York 10, N. Y. For a template of 20 ellipses, ½ to 2 in. long, order No. 2275—25, about $2. For 12 ellipses, 2½ to 4 in. long, order No. 2275L—25, about $3.50.*



Turbine oil with a past . . . and future

NONPAREIL TRADE MARK **Turbine Oil**

The story of Nonpareil Turbine Oil in the Water and Light Commission plant, Fairmont, Minnesota, is one of a long successful past and a guaranteed trouble-free future. It's a typical story of the kind of performance created by Nonpareil Turbine Oil.

In 1929 Nonpareil got its start in this plant by solving a sludge problem in a 1500-KW unit. Water could not be separated from the conventional lubricant previously used, and sludge had resulted. Good separation was obtained with Nonpareil, and sludge troubles were eliminated.

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None of the original fills of oil has ever been removed from the four turbines, either for reconditioning of the oil or for cleaning of the lubrication systems. Neutralization numbers of the oil fills have remained below 0.09 mg. KOH/gm. There have been no failures or troubles of any kind caused by faulty lubrication.

That's the past of Nonpareil Turbine Oil in this plant—23 years of trouble-free, cost-free lubrication. What's more, the same effective lubrication is assured for the life of these turbines. Each fill of Nonpareil is guaranteed by Standard Oil to last for the life of the turbine it lubricates and to maintain a neutralization number below 0.15 mg. KOH/gm.

A Standard Oil lubrication specialist will be glad to show you lubrication records of Nonpareil in installations similar to your own. In the Midwest, you can contact him by phoning your local Standard Oil office. Or write: Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

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