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GEOMETRICAL SKETCHING TEMPLATE

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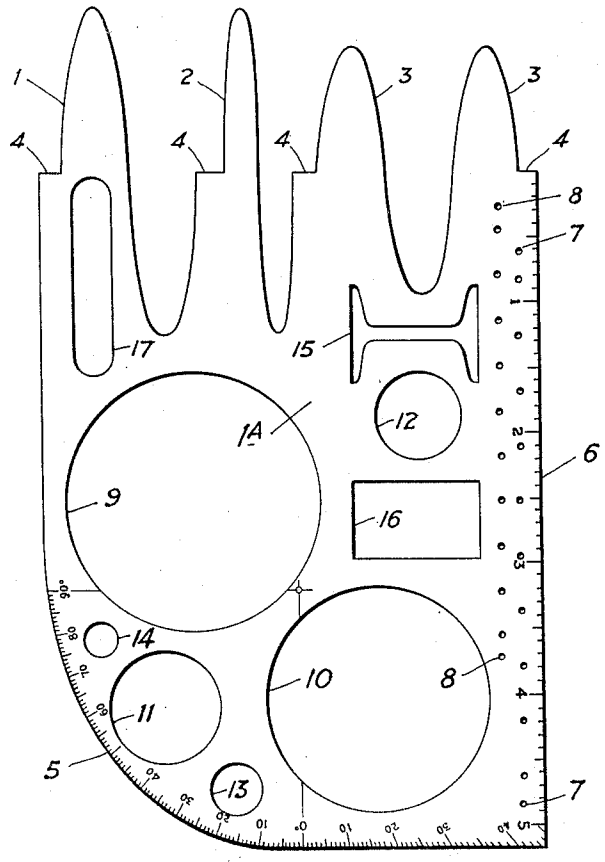


Fig. 1



Fig. 2

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GEOMETRICAL SKETCHING TEMPLATE

Austin John Roper, Vancouver, British Columbia, Canada

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1 Claim. (Cl. 33—174)

1

My invention relates to improvements in a geometrical sketching template and consists in forming a template preferably of Celluloid or transparent plastic material and forming or cutting the edges thereof into pre-determined configurations and further cutting or forming in the body proper thereof, a plurality of pre-determined geometrical figures.

The object of my invention is, to provide a simple, useful and accurate template as an aid to engineering students and professional men, in sketching graphically, the problems and the solution of such problems in engineering design, particularly that branch known as thermo-dynamics, but which may also be used by draftsmen in various other branches of engineering as a drafting tool.

Heretofore, students and engineers have had, of necessity, to do freehand sketching, which in the majority of cases, is poorly executed; or have recourse, as an alternative, to numerous conventional aids such as so called "French curves" which are cumbersome and require careful manipulation to obtain the desired results.

Students, particularly, have been known to use coins, buttons, paper clips and such devices in an effort to prepare neat notes and commendable examination papers, with a resultant loss of valuable time.

Wherefore, it had been my endeavour to provide a single device in the nature of a template that will adequately fill such a need, and I attain this object by means of the device illustrated in the accompanying drawings and specification following, in which:

Referring to the drawings:

Fig. 1 is a plan of the template, and Fig. 2 a side view of the same.

Similar numerals refer to similar parts throughout.

In the drawings the numeral 1A represents the template proper, formed preferably of Celluloid or transparent plastic material, having cut or formed on one edge thereof, a series of finger-like configurations 1, 2 and 3 of definite shape conforming to sine waves of certain known formulae having to do with voltage, current and power variations in inductive circuits in which the curve or wave as shown but the numeral 1 takes the form based on the formula A sin ωt; 2 the form of A sin $2\omega t$ and 3 the form B sin ωt wherein ω is equal to two times π times frequency, with t indicating the time factor. In preparing notes it is often necessary to superimpose one form of wave upon another form of wave

2

whose points of origin coincide with the origin of a single set of co-ordinates representing time and amplitude; and if executed freehand or with curves of wrong profile, the illustration becomes confused and presents the appearance of a mass of unbalanced waves intermingling without proportion.

Adjacent one side of each of the curves or waves so described, shoulders 4, are provided as a means to indicate the origin of coordinates in respect to positive and negative amplitude.

Extending around one of the corners of the template, a further curve 5, is provided, which is related to definite formulae based on pressure and volume in thermo-dynamics, usually expressed by the term $PV^k=C$ in which pressure multiplied by volume, whose result, when raised to some selected power k, equals some constant C.

Along one edge and around said pressure volume curve a circular scale, calibrated in degrees is provided for convenience of plotting angularity of lines.

The remaining edge, 6, of the template, constitutes a straight edge for ruling lines and has stamped or impressed thereon, a measuring scale calibrated in inches and tenths of an inch, but which may be of any other suitable scale, as a further convenience, and while such calibrations for straight and circular measurements are conventional, they nevertheless become necessary in plotting graphs and have the advantage of dispensing with additional instruments.

Adjacent the calibrated straight edge, 6, and parallel thereto, two rows of perforations 7 and 8 are provided for the purpose of determining areas by the mid-ordinate method and in which the scale of interval of the row indicated by the numerals 7 is greater than the scale interval of the rod indicated by the numerals 8. It will be noted that there are twelve perforations in each row, but that only ten of the perforations of each row are equally spaced and, significantly, that the first and twelfth perforation of each row, counting either way, lie a distance from the second and eleventh perforations, equal to one-half any succeeding interval of the ten equally spaced perforations. The object of this scale is to dispense with the employment of a polar planimeter, which is an expensive and unwieldy instrument, particularly for students, and requires careful manipulation.

In using the mid-ordinate scale, the second, eleventh and intervening perforations become the

mid-ordinates and the first and twelfth, the registers.

A plurality of geometrical apertures disposed throughout the body of the template, are provided as further aids in preparing notes, and in which the numerals 9, 10, 11, 12, 13 and 14 indicate circles of grades diameter which may be used for drawing simple circles, concentric circles, eccentric, and the like, cylinders, pulley diagrams and graphical expression of polar moments of inertia, and generally, any diagrams which usually require the use of a spring bow.

The numeral 15 indicates an aperture which may be used to illustrate structural shapes in cross section as I beams, H beams, channels, angle iron and T shapes for the purposes of indicating their respective dimensions or illustrating the elements of such sections.

16 indicates a rectangular opening which may be used for drawing right angles, triangles, squares and like figures or indexing notes; and 17, a slot for indexing or enclosing the answer to a problem; which is the usual practice in preparing engineering notes and examination papers, where it is desirable to indicate such answers apart from the maze of detailed calculations.

I am aware that prior to my invention templates for drawing curves of various shapes in the form of simple, compound, spiral, sine and involute have been made. I therefore do not claim such a combination broadly; but

I claim:

In a geometrical sketching template, of a Celluloid or transparent plastic nature, the combination of a series of sine wave forms in profile, disposed along an edge thereof of said template, said waves comprising curves formed in varying frequencies alternating through positive and negative amplitude, shoulders adjacent said waves, and said shoulders disposed upon and along the frequency ordinate of said waves in relation to and at an amplitude ordinate of said waves, as a means to differentiate between positive and negative amplitude.

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