

A simple method of Tracing upon the surface of a cylinder Spirals of any given constant, or variable, obliquity. By Mr. ROBERT MALLET.

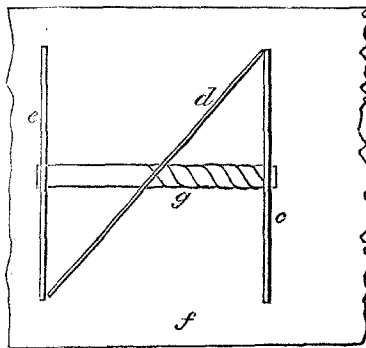
For many purposes of the arts a simple and rapid method of tracing spirals upon a cylindric surface is important; carvers, wood turners, &c., often want such, and in larger works, such as some particular branches of mill work and engineering, it is also frequently wanted.

The usual method, by dividing the cylindric surface into equal portions in circumference and length, and drawing diagonally is tedious. The following method, believed to be new, is simple and ready, and sufficiently exact for most purposes. Two straight edges of equal length and width, and about five-eighths of an inch in thickness each, are to be secured on a table, parallel to each other, standing on their edges, and distant from each other by nearly the length of the cylinder upon which the spiral is to be marked. Between these there is to be also secured, in a diagonal direction, stretching from one to the other, a third straight edge, formed of two slips of deal glued together, with a slip of straight cut thick Bristol board between them, projecting one-eighth of an inch at one edge. The section will then be thus—

Fig. 1.



Fig. 2.



The entire height of this from *a* to *b*, when standing on the table, must be a *shade* more than that of the two other straight edges. The three pieces being then thus arranged, the edge of Bristol board is charged with printer's ink. Then, on causing the cylinder to roll over the edges of the two parallel straight edges, in the direction of their length, the diagonal slip of inked Bristol board will trace a spiral upon the surface of the cylinder with very considerable accuracy.

Fig. 2, *c c*, the parallel straight edges; *d*, the diagonal tracer; *f*, the table; *g*, the cylinder, partly traced. The obliquity of the tracer with respect to the straight edges, will be an angle equal to that which the spiral at any point is intended to make with the axis of the cylinder. Hence, if the obliquity of the spiral, or pitch of the screw,

is to be variable, the tracer, in place of being straight, must be a curved edge, the angle formed with the straight edges (or rolling bars, as we may call them,) varying as determined.

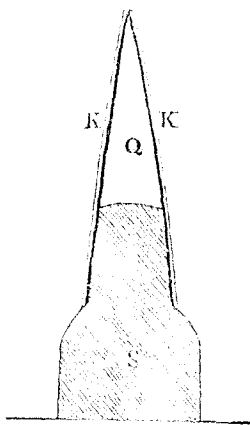
The length of the rolling bars will be equal to the circumference of the cylinder to be marked, as many times as the number of revolutions of the spiral.

Spirals may be marked on the surfaces of cones in this way, and the method is peculiarly applicable for marking on the large scale the trace spiral of screw propellers.

Fig. 3.

Polyzonal prisms may also be so marked with spirals.

For marking upon metallic turned surfaces, the trace of large original screws, there must be substituted for the Bristol board tracer, one formed of two sheets of thin brass, meeting at an acute angle, and charged between with printing ink. While the upper edges of the rolling bars must be covered with a surface of buff leather, both to prevent slipping (for which end the metal surface and these should be chalked,) and to allow by compression of firm contact between the metallic cylinder and the inking tracing bar, which is like a sort of continuous drawing pen. In section thus: K K, plates of brass; Q, space for ink; S, wood base. I have found this simple arrangement useful on several occasions, and am anxious thus to make it more so.



Ibid.

Apparatus for the analysis of Carbonates by ascertaining the loss of weight from the disengagement of Carbonic Acid Gas. By DR. URE.

A few years ago I had the following apparatus made for the ready analysis of carbonates, by ascertaining the loss of weight they suffered from the disengagement of their carbonic acid gas, during their solution in an acid. A B, are two globes of about two inches in diameter each; A, has its inferior neck strangled into a bore nearly capillary; B, stands lower, with its centre line on a level with the narrow neck of A. The tubes of these globes are about one-half inch in diameter. C, is shut at top with a perforated cork, through which enters, air-tight, a small glass tube, which is bent across to the mouth of the tube B, and then passes down into it a little below the centre line of the globe B. This globe is rather more than half filled with sulphuric acid, when the instrument is employed in the analysis of the carbonates. The standard weight of carbonate of soda = $24\frac{1}{2}$ grains, or of carbonate of potash = $31\frac{1}{2}$ grains, is then put into A, having previously laid a minute globe, or glass, over the lower orifice;