

B 14. Plate 8.

The subject of this article is a pantograph, as improved by Langlois, a mathematical instrument maker. A detailed account of this instrument may be seen in the Machines approuvées par l'Academie des Sciences, Vol. vii, No. 460. It is used for the purpose of tracing similar figures of any description in any relative proportions which may be required, and with any given velocities.

In the Annales des Arts et Manufactures, vol. v, page 59, we find the description of a machine for copying drawings and writings, which the inventor terms an Autograph. It is a modification of the Pantograph.

SECTION XV.

To convert direct motion in a given curve, and of velocity either equable, or variable by a given law, into alternate motion in a given curve, of velocity similar to that of the original motion, either equable, or variable according to a given law, and in the same, or in different planes of direction.

THE given direct motion in a curve may be converted into alternate circular motion by the methods shewn in Section VIII.; and the alternate circular motion so obtained, into an alternate motion in a given curve, by the methods shewn in Section X.

SECTION XVI.

To convert alternate rectilinear motion, of velocity either equable, or variable by a given law, into alternate rectilinear motion, of velocity similar to that of the original motion, either equable, or variable according to a given law, and in the same, or in different planes of direction.

THE given alternate rectilinear motion, may be converted into circular motion by the methods given in Section VII.; and the motion so obtained, into alternate rectilinear motion, by the subjects of the same Section.

All the movements described in Section I. will also furnish a solution of this problem.