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NEW CYCLOIDAL CHUCK.

Fig. 1.

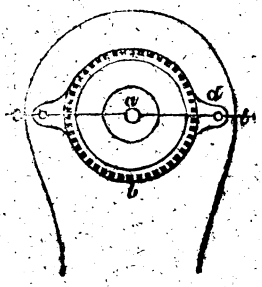


Fig. 2.

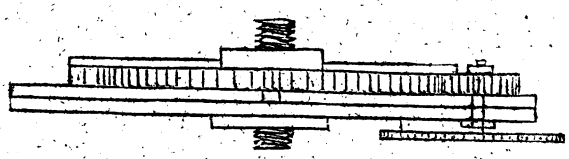
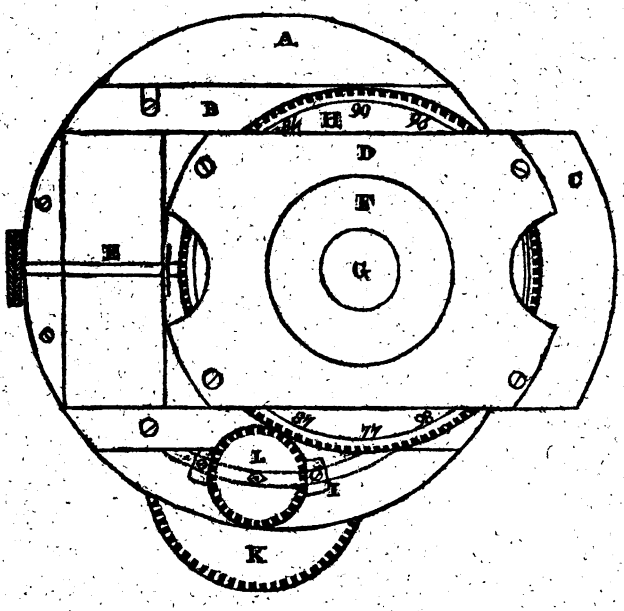


Fig. 3.



CYCLOIDAL CHUCK.

SIR,—Some time ago, one of your Correspondents asked how a Cycloidal Chuck (for ornamental turning) is constructed. I never heard that such a thing had been made; but, on a little reflection, I felt convinced it might be, and would produce a very great variety of beautiful patterns. I have looked in vain in your subsequent Numbers for a reply to your querist, and in the meantime, as my leisure would permit, have endeavoured to reduce my own ideas to practice. The result has been the completion of an instrument which I think correct in principle, and which works to my entire satisfaction; and I shall feel much obliged to any of your readers for suggestions for its improvement and perfection.

Description.

Fig. 1 exhibits a portion of the face of the lathe; *a* is the mandril; *b*, a brass cog-wheel, bolted to the head by the bolt, *c*; the wheel having been previously soldered to a piece of thin iron, with a projection on each side, *d*.

Fig. 2 is a profile view of the lathe.

Fig. 3 represents the face of the chuck.

A is a circular iron plate 3-16ths of an inch thick, carefully and accurately turned.

B, Plates for forming a groove for the principal sliding plate, C.

D, A cover for the principal wheel of thin iron, supported by four feet of brass beneath the four corner screws.

F, A piece of iron carrying the screw, G, upon which the work is to be fixed. This iron is turned with a pivot that goes through the large brass wheel, H, to which it is firmly soldered, and this pivot turns in the principal sliding plate, C. As the socket in the sliding plate is nicely drilled in the centre in the lathe, and the circle in the covering plate, D, is also turned out after it has been fixed in its place, so the wheel must revolve with perfect accuracy, and without any shake, having been itself carefully finished between two dead centres.

H, The principal wheel, cut accurately with 96 teeth, which are numbered upon it. If a catch-spring were added to the chuck, in this state it would form a strong eccentric chuck; and it would be easy to make it answer for an oval chuck, by longitudinal perforations in the foundation-plate, through which two lips might move upon the eccentric circle fixed to the head of the lathe.

I is a piece of steel, which has a corresponding one on the back of the chuck, to which it is strongly screwed, and through both of which a hole is drilled for the axis of the wheel, K, which axis carries the driving-wheel, L. There is a concentric perforation in the plate of 5-16ths of an inch in breadth, which allows the two last-mentioned plates, with the wheels they carry, to follow the great wheel, H, however far from the centre it may be set.

K is a wheel on the back of the plate, cut with 72 teeth. It is twice the diameter of the one fixed upon the head of the lathe, which is of course cut with 36 teeth. When, therefore, the chuck is screwed into the mandril, the wheel, K, revolves *once* on the fixed wheel, while the mandril revolves *twice*. The small face-wheel has 24 teeth, and is one-fourth the diameter of the great wheel, H; therefore that revolves *once*, while the mandril has turned *eight* times, and an accurate circle of eight cycloids of any diameter will be traced. By having small driving-wheels of different numbers, proper proportions of 96, the number of cycloids will be greater or less at pleasure, and may be cut nearer or farther from the centre, one within another; and by taking off the small driver, and moving the great wheel forward or backward any number of cogs, the cycloids will intersect each other with a beautiful and endless variety of forms. By making the small plates, I, sufficiently long to carry another small wheel, which I have done upon a fixed pivot, all the patterns and cycloids are reversed. But I have added mine to a rose-engine, to which I had previously adapted a drill apparatus, so that I can form the cycloids with any of the patterns upon that, or with close, wide, regular, or irregular patterns of intersecting circles of any diameter, and, had I had sufficient forethought to have made this chuck answer for oval work, all the beautiful combinations of ellipses, either simple, figured with the rose-engine, or worked in cycloids; or, in short, the kaleidoscope itself hardly can afford a more endless variety of symmetrical forms than it would have done.

I am, Sir, &c.

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Norton, near Stockton,
25th Oct. 1824.

P. S. I scarcely need to add, that the lathe with this chuck must be worked with a slow hand-motion.

AN ANIMAL CLOCK.

The note, of which the following is an abstract, was sent to the Society of Natural Sciences of Switzer, and is inserted in the Bibliothèque Universelle, vol. xxvii. page 160.

Mons. Chavannes, whilst residing during last summer at Wuarrens, near Echallens, had occasion to hear some account of a man, who, without any uncertainty or mistake, could indicate the precise hour by day or night, and even the minutes and