Please direct your reply to Mr. William Hamilton, Actuary of the Franklin Institute.

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New method of communicating Circular Motion in a lateral direction.

By WM. HOWARD, Esq. United States Civil Engineer.

TO THE EDITOR OF THE JOURNAL OF THE FRANKLIN INSTITUTE.

SIR,—So far as I am informed, the arrangement which I describe below, is new. It is possible, however, that your extensive knowledge of machinery, may include it in your list of "Modern Antiques," as having been thought of long ago: but if not, I would be obliged to you to insert this paper in the Journal.

WM. HOWARD.

A and B, are two wheels intended to have a similar circular motion, round their centres C and C'; E, F, G, H is a system of parallel rules, attached to the pins or cranks D and D', and also fastened to the points G and H, which points are immoveable with regard to the centres C and C'. From a little consideration of the above sketch, it appears that the line DD' being always parallel to GH, and the distance of D and D' apart being invariable on account of the connecting bar, one of these points must exactly describe the curve described by the other.

I have sent you a drawing of the manner in which I have applied this arrangement to a small model of a locomotive engine, for which it was contrived, and have found it to work very well. The imperfection of the toggled chain, formerly used in such engines, and in cot-

ton machinery, has, I believe, caused it to be generally laid aside. In some of the engines lately made in England, a connecting bar, similar to the above, has been used, but without the addition of the parallel rules.

MODERN ANTIQUES, No. 3. *By the Editor.*

Economical mode of Transmitting Motion. Invented by Mr. JOHN M'DOWALL, Vauxhall. From the Register of Patent Inventions, for October, 1829.

"MOTION is often required to be communicated to machinery at a distance from the first mover, and this is usually effected by a metallic shaft, which, if the distance between the machinery and the first mover be great, must be made of considerable thickness to prevent its being twisted to pieces by the power applied, or else by chains, straps, or ropes, to prevent the slipping of which on the drums or pulleys over which they pass, causes considerable impediment to the motion, by friction. These are inconveniences which cannot in all cases be avoided; but, under some circumstances, the following method of transmitting motion, through the medium of three rods and two triple cranks, connecting the machinery with the first mover, might be introduced with considerable advantage.

"The apparatus is represented with the axes of motion placed horizontally by Fig. 1; and with the axes placed vertically by Fig. 2. The same letters represent similar parts in both figures. It will be perceived that the motion may be in the direction shown by the arrows, or the contrary; and hence the motion may be reversed at pleasure.

Fig. 1.

Fig. 2.

"The triple crank *a, b, c*, to be put in rotation by any first mover is connected by three rods to a similar crank, *a', b', c'*, of equal dimensions; and as the cranks project from the axes at equal dis-