

THE OPERATIVE MECHANIC, AND BRITISH MACHINIST VOLUME 1

BEING A PRACTICAL DISPLAY OF THE MANUFACTORIES AND
MECHANICAL ARTS OF THE UNITED KINGDOM
JOHN NICHOLSON (ESQ. CIVIL ENGINEER.)



Resumo de The Operative Mechanic, and British Machinist Volume 1; Being a Practical Display of the Manufactories and Mechanical Arts of the United Kingdom

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If two cylinders be placed in close contact, motion cannot be communicated to the one without that motion, by means of the irregularities of their surfaces, (of which we have spoken under the article Friction,) being communicated to the other, and the smaller cylinder shall perform exactly as many revolutions to one revolution of the larger cylinder, as the larger cylinder contains upon its circumference so many measured circumferences of the smaller cylinder.

Wheels, however, which act by their surfaces only, are ill calculated to transmit motion to any considerable extent, as the motion which the follower has acquired is not of sufficient power to overcome the great resistance which would, in such case, be opposed to it; consequently it becomes necessary to have projections or teeth, and that form of the teeth will be the best which causes the wheel to act as though the motion were communicated by contact of the pitch lines.

Spur gear, fig. 39. If the three circles 1, 2, 3, in contact at the point a, be made to revolve about their centres, so that they shall continually touch at the point a, their motions will be similar to what would have been generated by one communicating motion to the other two by contact; and circle 3- will move as though rolling on the external surface of circle 1, and internal surface of circle 2, and consequently become the generating circle of the exterior epicycloid on circle 1, and the generating circle of the interior epicycloid on circle 2.

As the diameter of circle 3 is equal to the radius of circle 2, the interior epicycloid will be a straight line passing through B the centre of circle 2; and, supposing the point a to have performed that portion of a revolution which places it at K, a portion of the exterior epicycloid..

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